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NEW FISHES OBTAINED BY THE CRANE  
PACIFIC EXPEDITION

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REPORTS ON RESULTS OF  
THE CRANE PACIFIC EXPEDITION

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## NEW FISHES OBTAINED BY THE CRANE PACIFIC EXPEDITION

BY ALBERT W. HERRE

Through cooperation of Field Museum and Stanford University, the writer was associated with the Crane Pacific Expedition as ichthyologist. After the return of the expedition, the large collections of fishes were studied at Stanford University and a comprehensive report on them was prepared. Since publication of this report will be delayed for some time, it has seemed advisable to describe a number of new genera and species. With the exception of one from Cuba and several from the Galapagos Islands, all the new forms are from the South Pacific. The principal localities are New Guinea, New Hebrides, Tuamotu Islands, Society Islands, Waigiu Island, Fiji Islands, Solomon Islands, and Marquesas Islands. The type specimens, in all cases, were collected by the Crane Pacific Expedition.

### Family DISPARICHTHYIDAE

Exceedingly elongate, cylindrical, and scaleless eels, with tapering tail; the vent very far forward; the anal beginning almost at the throat and more developed than the dorsal, which begins about twice the length of the head behind the gill opening. The jaws are short and blunt, not extended, with the maxillary arranged as in percoid fishes, above the premaxillary and overlapping it. The teeth are in a single series in both jaws, the maxillary toothless and smooth marginally; the vomerine region has a short row of teeth. The narrow, pointed tongue is adherent. The anterior nostril is midway between the eye and the tip of the snout, larger than the posterior nostril, which is a slit at the upper front of the eye. The large eye is over the angle of the mouth. The gill openings are wide and nearly confluent. The pectorals are very small. The branchiostegals are few.

#### *Disparichthys* gen. nov.

The characters of the single genus are sufficiently indicated above; branchiostegals 7.

Type, *Disparichthys fluviatilis* sp. nov.

***Disparichthys fluviatilis* sp. nov.**

*Type* from Marienberg, Sepik River, New Guinea. No. 17192 Field Museum of Natural History. Length 140 mm. May 27, 1929.

The depth is more than 70, the head more than 28 times in the length; as the tail is broken the eel is slenderer than the measurements indicate. The snout equals the eye, 3.33 times in the head.

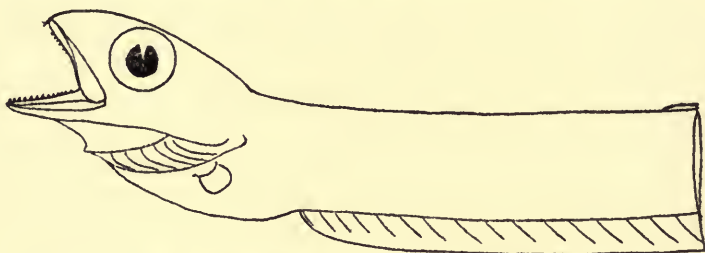


FIG. 31. Head of *Disparichthys fluviatilis* Herre. Five times natural size.

There is a single row of teeth in each jaw, those in the lower jaw small but much larger than the minute teeth of the upper jaw. On the vomer are two median fixed teeth, the hind one much larger than the first one or than any of the jaw teeth. The anal begins at the throat, the distinct rays not counted because of the broken tail.

The color in alcohol is yellowish.

Described from a specimen 140 mm. long; taken from a brook at Marienberg, about a quarter of a mile from the Sepik River, New Guinea.

This singular eel is very different from anything described in the available literature.

### Family MURAENIDAE

***Gymnothorax efatensis* sp. nov.**

*Type* from Vila, Efaté Island, New Hebrides. No. 17193 Field Museum of Natural History. Length 165 mm. March 27, 1929.

The depth is 15, the head 8.68 times in the length; the eye is 7.6, the snout 6.33, the gape 2.37 times in the head. The length of the tail equals that of the head and trunk together. There is a row of eleven sharp pointed teeth on the premaxillary plate, the one at the tip smaller than the others. There are two depressible teeth, the anterior one very small, on the middle line of the premaxillary. There is a double row of teeth on the maxillaries, the

inner row of slender and rather small depressible teeth, the outer row of minute fixed teeth. On the vomer is a double row of blunt rounded teeth, composed of eight pairs, with two single teeth behind these. On each side of the lower jaw is a row of 18 or 20 sharp, fixed, backward-pointing teeth and on each side near the tip an inner row of three much larger depressible teeth. The gill openings are ventral in position.

The ground color in alcohol is yellowish white, everywhere covered with minute irregular spots and markings of purplish brown so that the ground color is reduced to an intricate reticulated maze of fine lines; the dorsal and anal are somewhat paler than the other parts, the coloration and markings otherwise uniform. A female *Gymnothorax*, 165 mm. long, full of eggs 1 mm. in diameter about ready to spawn, was taken at Vila, Efaté Island, New Hebrides. It resembles in color some adults of *Gymnothorax pictus*, but that species retains its juvenile characteristics until it is much larger and is not sexually mature until it is much longer. This pretty little eel was taken from the stomach of a sea-snake; digestion had removed the skin from the snout and anterior part of the top of the head, the specimen otherwise being in fine condition.

#### Family ARIIDAE

##### *Arius solidus* sp. nov.

*Type* from Timbunke, Sepik River, New Guinea. No. 17201 Field Museum of Natural History. Length 340 mm. May 14, 1929.

Branchiostegals 6; dorsal I, 7; anal 18; pectoral I, 9.

The body is moderately robust, the broad head nearly as wide as long, its depth 1.4 times in its own width. The depth of the body is 3.85 to 4.75 times, the head 2.96 to 3.25 times, the deeply forked caudal 2.9 to 3.2 times in the total length. The eye is variable, much smaller proportionately in large specimens, 6.33 to 8.3, the snout 2.7 to 3, the interorbital 1.8 to 2, the least depth of the caudal peduncle 4 times (in one large specimen 3.8 times) in the head.

The mouth is very wide, the upper lip thin and the lower lip but little thickened but with a wide thick fold at the angles of the mouth, the upper lip projecting but slightly and the teeth not visible when the mouth is closed. The upper teeth are in a single continuous arched band which is widest posteriorly. The lower teeth are in a narrow discontinuous band, the two halves separated by a median gap anteriorly and widest at the middle near the gap. The entire

palate is covered by a solid plate of finely granulose teeth. The maxillary barbel extends to the base of the pectoral or falls a little short of it. The head shields are granular, arranged in radiating lines, occipital process broad, its width three-quarters of its length, sides converging posteriorly, truncate posterior end reaching the small semicircular granular basal bone before the dorsal spine. The median fontanel is very elongate, more than half the head in length, its forward end extending almost to the lip and its very narrow elongate posterior end reaching nearly to the nape. There is an oval fontanel above the opercle. The triangular humeral process is smooth. There are 8 gill rakers on the upper arm, 14 or 15 on the lower.

The dorsal spine is rough-granulose anteriorly, the hind side with small barbs above, the rest smooth or nearly so, 1.8 to 1.95 times in the head, not including its filamentous prolongation, the dorsal fin 1.4 to 1.6 times in the head. The pectoral spine is granulose to bluntly barbed in front, strongly barbed behind, with a filamentous prolongation, the spine proper 1.5 to 1.7 times in the head. The base of the adipose fin is 1.6 to 1.85 times in that of the dorsal and 4 to 6 times in the distance between the dorsal and the adipose fin. The anal base is 1.9 to 2.2 times in the head. The ventral extends to the anal base, its length 1.9 to 2 times in the head.

In life the color is rich golden bronze, with two rows of golden spots beginning opposite the posterior margin of the dorsal and extending to the caudal. In alcohol the color is rich purplish brown above, the under side white or yellowish white, the lower half of the sides sometimes with a silvery sheen; the fins are all more or less dusky or purplish brown, or the ventrals may be paler, violaceous, and the under side white.

The character of the palatal teeth distinguishes this cat-fish at once; even the smallest specimens obtained showed the palate largely covered by a homogeneous plate, which merely becomes broader and longer in the adult.

The type is a specimen 340 mm. long, taken at Timbunke, a Sepik River village 120 miles from the sea; with it three paratypes, 186 to 253 mm. in length, were obtained.

Other paratypes were collected as follows: ten from Kanganaman, 136 to 226 mm. long; one from Koragu, 287 mm. long; eight from Nyaurangai, 134 to 192 mm. long, all from New Guinea.



***Arius kanganamanensis* sp. nov.**

*Type* from Kanganaman, Sepik River, New Guinea. No. 17194 Field Museum of Natural History. Length 178 mm. May 15, 1929.

Dorsal I, 7; pectoral I, 9; anal 17; branchiostegals 5; gill rakers 8+17.

The depth is 4.9, the head 3.25, the deeply forked caudal 3.6, the pectoral 1.35 times in the length. The eye is twice in the snout, 4 times in the interorbital, and 6.1 times in the head. The moderately broad snout is 3 times, the wide interorbital 1.5 times, the least depth of the caudal peduncle 3.4 times in the head.

The breadth of the head is 1.37 times in its own length. The mouth is wide with thin lips and a thickened fold at the angles, the upper lip projecting very slightly, the teeth not visible when the mouth is shut. The upper teeth are small, slender, needle-pointed, in an arcuate band of about 5 or 6 rows, widest posteriorly and divided into right and left halves by a narrow interspace at the apex. The teeth of the lower jaw are in a narrower and more arched band,



FIG. 32. Teeth of *Arius kanganamanensis* Herre.

separated into right and left halves by a median interspace at the symphysis, smaller than the teeth of the upper band. At least some, if not all, of the teeth in both jaws are depressible. The vomerine teeth are in a large patch as shown in the figure, formed by the coalescence of the original right and left patches; at either side is a small patch of palatal teeth, either united with the central patch or exceedingly close to it and forming a lateral wing.

The head shields are granulose, the granules arranged in radiating lines. The occipital process is rather narrow, its sides nearly parallel, its truncate end extending nearly to the small narrow semicircular granular basal bone before the dorsal spine. The median fontanel is very long, pointed at both ends, extending nearly to the nape,

its length 1.4 times in the head. There is an oval fontanel under the upper end of the opercle. The humeral process is smooth, its upper margin concave. The maxillary barbel extends upon the pectoral base and equals the mandibular barbel, each equal to the depth or twice the snout.

The dorsal spine is granulose anteriorly, or with a small spine or two near the tip, the posterior side barbed, 1.6 times in the head. The first dorsal ray is a little longer than the spine. The pectoral spine is like the dorsal spine but is more strongly barbed and a little shorter. The dorsal base is 2.75 times in the head. The base of the adipose fin is 5.5 times in the head, 5.2 times in the distance between the dorsal and adipose fins. The anal base is 1.9 times in the head. The ventral does not reach the anal origin, and is twice in the length of the head.

The color in alcohol is chocolate to blackish above, paler far down on the sides, and yellowish beneath. The ventrals are yellowish with dusky specks distally, the other fins all blackish.

Described from the type, 178 mm. long, in poor condition, purchased at Kanganaman, on the middle Sepik, New Guinea. A paratype, in wretched condition, is the same length. These specimens were in very poor shape when obtained.

#### **Brustiaris** subgen. nov.

Type, *Arius nox* sp. nov.

This section of the genus *Arius* is distinguished by the greatly increased number of gill rakers, 16 on the upper limb, 28 to 44 on the lower limb, the slender rakers equal to or three-fourths an eye diameter in length.

#### **Arius nox** sp. nov.

*Type* from Nyaurangai, Sepik River, New Guinea. No. 17195 Field Museum of Natural History. Length 192 mm. May 22, 1929.

Dorsal I, 7; anal 17 or 18; pectoral 1, 8 or 9; gill rakers long, slender, 16 above, 28 to 44 below.

The body is slender, elongate, the anterior profile descending in a steep, nearly straight line from the dorsal origin to the tip of the snout, a little concave at and behind the interorbital. The depth is 4.6 to 5.55, the head 3 to 3.3 times in the length. The snout is broadly rounded, the head narrow, its breadth 1.5 to 1.9 times in its length. The deeply forked caudal is 3.25 to 3.66 times in the length.

The mouth is wide with noticeably weak jaws and thin lips, the jaws even and the teeth entirely concealed when the mouth is

shut. The labial fold at the angles of the mouth is little developed. The upper teeth are in a continuous arched band, widest posteriorly and very narrow at the middle. The lower teeth are in a narrow band divided into two sections by a septum at the symphysis, the band broadest anteriorly and tapering posteriorly. The palatal teeth are in four distinct patches forming an arched band, the patches at first small and widely separate; later the inner pair become much larger than the others and close together or nearly contiguous, all the patches becoming rounded or nearly square.

The head shields are finely granulate, the granules in radiating lines, the occipital process slender, its width a little more than half its length, its sides converging, the basal bone before the dorsal very small, curved. The median fontanel is very narrow, elongate, reaching almost to the occipital process, its length three-quarters that of the head. The humeral process is small, triangular, smooth. The barbels are all comparatively short and very slender, the maxillary barbel rarely reaching the pectoral base and usually not extending to the hind margin of the opercle. The mandibular barbel equals the maxillary barbel.

The eye is 6 to 6.9, with a narrow free margin; the snout 3 to 3.2; the interorbital 2.12 to 2.3; the least depth of the caudal peduncle 4 to 4.4 times in the head.

The dorsal and pectoral spines are noticeably slender, their anterior margins granulose, their hind margins with small, blunt serrations, their tips with filamentous prolongations. The dorsal spine is 1.7 to 1.9 times, the pectoral spine 1.75 to 2.15 times in the head. The dorsal height is 1.4 to 1.6, the pectoral length 1.4 to 1.8 times in the head. The base of the adipose fin is contained 5.5 to 7.5 times in the distance from the dorsal to the origin of the adipose fin. The ventrals are short, seldom reaching the anal base, 1.7 to 2.25 times in the head.

The color in alcohol is black above and on the sides, the under surface and a very little of the lower part of the side white, yellowish white, or pinkish white. The fins are all black except the ventrals, which vary from dusky to nearly pale, the under side of the ventrals usually whitish.

Described from the type and five paratypes, 162 to 192 mm. in length, from Nyaurangai, and six paratypes, 159 to 202 mm. in length, from Kanganaman, two villages on the middle Sepik River, New Guinea.



**Hemipimelodus papillifer** sp. nov.

*Type* from Timbunke, Sepik River, New Guinea. No. 17211 Field Museum of Natural History. Length 221 mm. May 14, 1929.

Branchiostegals 5; dorsal I, 6, 1; anal 19; pectoral I, 10; gill rakers 9 or 10.

The body is elongate, slender, posteriorly compressed, the head pointed anteriorly, the anterior profile descending in a steep straight line from the dorsal to the snout tip. The depth is 4.6 to 4.7, the head 3.3 to 3.8, the deeply forked caudal 3.7 to 3.95, the pectoral 4.25 to 4.4 times in the length. The eye is 7 to 7.6, the snout 2.75, the interorbital 2.2 to 2.25, the least depth of the caudal peduncle 3.75 to 4.3 times in the head.

The top of the head is mainly smooth, the granules but little developed on the occipital process, which is keeled posteriorly. The median fontanel is much less than half the length of the head and does not extend to the occipital process. The humeral process is roughly triangular, pointed behind, without a crest or ridge. The eye has a narrow free margin, little evident, its posterior margin midway between the tip of the snout and the posterior angle of the opercle, or a little before the middle of that distance. The mouth is small, with a thick, projecting upper lip and a thick fold at the angles, the upper band of teeth nearly entirely exposed when the mouth is closed. The maxillary barbels extend upon the pectoral base or to a third of its length, the other barbels much shorter. The dorsal spine is granulose on its anterior margin, the posterior margin apparently smooth, its tip with a filamentous prolongation. The spine proper 5.3 to 5.5 times in the total length, 1.45 to 1.65 times in the head, the dorsal height 1.3 times in the head. The adipose fin base is 3.3 to 4 times in the distance between the dorsal and the adipose fin and about two-thirds as long as the dorsal base. The pectoral spine is smooth or slightly granulose on its front margin, the posterior side strongly serrate, equal in length to the dorsal spine, the pectoral fin length about 5.5 times in the total length. The anal base is 1.5 to 1.75 times in the head. The ventrals scarcely reach the anal origin or fall short of it some distance, 1.95 to 2.15 times in the head. The pectoral has no axillary pore.

In life the color is bluish dusky above, the lower half silvery on the sides and white beneath, the caudal yellowish, with conspicuous transverse rows of papillae from the dorsal origin to the caudal peduncle, extending downward one-half or three-fourths of the distance to the ventral surface. In alcohol the color is purplish brown



above, the sides more or less silvery bluish, shading into white beneath; the caudal is yellowish, the adipose fin dusky, the dorsal dusky bluish, the anal dusky posteriorly. The lines of papillae are very conspicuous.

Described from the type, a specimen 221 mm. long taken at Timbunke, a village on the Sepik River, about 120 miles from the sea, and two paratypes, 220 and 226 mm. long, taken at Marienberg, Sepik River, New Guinea.

#### Family HEMIRHAMPHIDAE

##### *Zenarchopterus sepikensis* sp. nov.

*Type* from Koragu, Sepik River, New Guinea. No. 17213 Field Museum of Natural History. Length 160 mm. May 23, 1929.

Dorsal 13 or 14; anal II, 10; there are 57 or 58 scales in the lateral line, and 7 scales above it to the dorsal origin.

The depth of the elongate, laterally compressed body is 7 to 7.3 times in the length, the breadth 1.5 to 1.6 times in the depth. The head, measured to the tip of the upper jaw, is 3.6 to 3.8 times in the length. The length of the beak is 4 to 4.6 times in the total length, 0.81 to 0.88 of the length of the head without the beak. The eye is 4.6 to 4.9 times in the head, 2 to 2.25 times in the postorbital region, and 0.8 of the flat interorbital. The length of the scaly upper jaw is a trifle more than its basal width. The breadth of the anteriorly rounded preorbital is twice in the eye. The very small, pointed teeth are in bands, the band in the lower jaw exposed, the anterior curved portion narrower than the lateral portions. The pectoral is 1.35 to 1.5 times in the head, one-fourth to one-half longer than the postorbital portion of the head. The fifth, or exceptionally the sixth, dorsal ray is thickened, elongate and often much curved, 1.5 to 2.1 times in the head. In males the origin of the anal is beneath the third dorsal ray, its base 2.5 to 2.9 times in the base of the dorsal, the fourth ray much enlarged, with spatulate, triangular upper half, the fifth and sixth rays also enlarged but not so markedly. In females the anal origin is beneath the fourth dorsal ray, its base 3 times in the dorsal base, with concave posterior margin. The short ventrals are less than one-half the length of the pectorals. The distance from the ventral origin to the caudal base is 1.7 to 1.8 times in the distance from the ventral origin to the eye. The caudal is diagonally truncated, the lower part longest, 5.2 to 5.8 times in the length.

The color in life was bright silvery, the dorsal region greenish, the belly nearly white, the caudal, dorsal, and anal dusky, the beak black. In alcohol the back is brown to blackish brown, the sides paler to yellowish beneath. The sides of the head and trunk are silvery, with a silver band from the angle of the gill opening to the caudal base, widening posteriorly, where it is margined by a black line above. All the fins, except the ventrals, are dusky or blackish.

Here described from the type, a male 160 mm. long, and nine paratypes, four of them females, the latter from 125 to 136 mm. long. The smallest male is 138 mm. in length.

This half-beak was obtained at Koragu, New Guinea, on the Sepik River, about 215 miles from the sea. It is very abundant in the main river and its tributaries and is much used as food by the natives. The native name is *changat*.

Ten specimens, 112 to 132 mm. in length, were secured at Marienberg, on the Sepik River, and three specimens, 63 to 115 mm. in length, at Ambot, on the Kerame River, about thirty miles from the Sepik.

#### Family EXOCOETIDAE

##### *Cypselurus alienus* sp. nov.

*Type* from south coast of Cuba, near Santiago. No. 17224 Field Museum of Natural History. Length 159 mm. November 28, 1928.

Dorsal I, 11; anal I, 7 or 8; pectoral I, 12; scales in lateral series 44; 7 scales above lateral line to dorsal origin; 24 to 25 predorsal scales.

The elongate fusiform body is broad above, the sides moderately compressed, deepest before the ventrals, the depth 5.1 to 5.25 times, the head 3.85 times in the length. The eye is large, not projecting upon the upper profile, equal to the flat interorbital, 2.9 times in the head, the posterior margin of the pupil midway in the length of the head. The snout is blunt, 3.7 times in the head, 1.27 times in the eye. The mouth is moderate, the jaws equal or the lower very slightly projecting. The teeth are very small, conical, in narrow bands on jaws and palatines; none on the vomer. The origin of the dorsal is opposite the twenty-sixth scale, much in advance of the anal, which is beneath the seventh dorsal ray; the base of the anal is 2.3 times in the dorsal base. Pectorals extend beyond base of last dorsal ray. Ventral inserted midway between tip of snout and tip of upper caudal lobe, or midway between last caudal vertebra and

middle or posterior third of opercle, its tip extending to end of anal, much longer than the head, which is about 1.3 times in its length. The caudal is deeply forked.

Color in alcohol brown to purplish brown above, becoming pale silvery on sides, silvery white below; pectorals black within, blackish externally with some silvery luster; paler anteriorly and along lower margin with a reddish brown blotch basally; dorsal and ventrals pale; caudal brownish.

Here described from the type, 159 mm. long, collected on the south coast of Cuba near Santiago de Cuba, and one paratype, 158 mm. long, obtained in Caicos Passage.

Near *C. bahiensis*, but differs in fin ray counts, scalation, position of ventrals, and color of fins.

#### Family HOLOCENTRIDAE

##### *Myripristis undecimalis* sp. nov.

*Type* from Takaroa, Tuamotu Islands. No. 17228 Field Museum of Natural History. Length 123 mm. February 12, 1929.

Dorsal XI-I, 14; anal IV, 12; scales 3-28-6; predorsal scales 7; depth 2.2, head 2.9 in length; eye 2.23, snout 4.67 times in head.

The laterally compressed body is thickened in the anterior third, the dorsal and ventral profiles nearly equally convex. The head and snout are boldly convex, the large circular eye prominent and twice the short blunt snout. The interorbital has four strong ridges, two median and one on either side, its breadth 1.66 times in the eye. The mouth is oblique, the lower jaw barely projecting beyond the upper; an external cluster of six short conical teeth at each anterior angle of the symphysis, and one or two similar teeth at each anterior angle of the upper jaw. The maxillary extends to beyond the pupil, beneath the posterior fourth of the eye, its length 1.78 times in the head; a few very small teeth on the lower side of the posterior extremity of the maxillary. The breadth of the expanded distal end of the maxillary is 2.2 times in the eye. The bones of the head are all finely serrate, the opercular spine not much enlarged. The dorsal spines are slender, not very strong, the fourth one longest, 1.68 times in the head. The anterior soft dorsal rays are 2.5 times the posterior ones, only a trifle longer than the fourth dorsal spine. The third and fourth anal spines are of equal length, the third about twice as stout as the fourth, a little shorter than an



eye diameter, 2.6 times in the head. The anterior anal rays equal the longest dorsal rays. The caudal peduncle is slender, its depth a trifle more than three-fourths of its own length. The deeply forked caudal is a little longer than the head. The pectoral is 1.25 times in the head, its tip not extending beyond that of the ventral, which is 1.4 times in the head.

In life the color was bright red, the scales on the dorsal region with darker red edgings and a dark blood-red mark on the shoulder and upper posterior edge of the opercle, the fins paler red. In alcohol the color is red, becoming whitish on the under parts, with a silvery luster over all, each scale on the upper part of the body with a broad blackish vertical bar near the margin. The top of the head is also blackish brown; a dusky bar on the opercle and a black blotch in the pectoral axil. The fins are all pale, yellowish white. The pupil is white.

Here described from the type and only specimen, 123 mm. long, collected by me at Takaroa, an atoll of the Tuamotu Archipelago. This species is close to *M. murdjan* but is separated at once by its dorsal spines.

*Undecimalis*, eleven, because of its eleven dorsal spines.

***Myripristis mooreanus* sp. nov.**

*Type* from Moorea Island, Society Islands. No. 17225 Field Museum of Natural History. Length 86 mm. February 23, 1929.

Dorsal X-I, 14; anal IV, 13 or 14; 38 scales in the lateral line, exclusive of those on the caudal, 4 above and 6 below the lateral line; 8 predorsal scales.

The oblong body is laterally compressed, rather thick anteriorly, the dorsal and ventral profiles moderately convex, the depth 2.4 to 2.5 times, the head 2.94 to 3 times in the length. The head is short and thick, its upper profile descending steeply from the origin of the dorsal. The eye is very large, prominent, high up, 2 times in the head. The broad blunt snout is boldly convex, very short, 5 to 5.3 times in the head and twice in the eye. The interorbital is broad, with two longitudinal ridges, nearly flat, its width 3.6 times in the head, 1.6 to 1.75 times in the eye. The mouth is very oblique, the lips equal; the maxillary extends beneath or nearly as far as beneath the posterior margin of the eye, and is contained 1.75 times in the head; the lower edge of the maxillary is smooth, or may have a few tiny serrations near its posterior angle. The margins of the orbital, suborbital, preopercle, interopercle, and opercle are

all finely to minutely serrate, the opercle with a moderately strong spine at its upper angle. The dorsal spines are weak, slender, the third spine longest, about twice in the head; dorsal rays barely higher than longest dorsal spine. The third anal spine is much stouter than the fourth but approximately equal to it in length, about 1.5 to 1.67 in eye, the anal rays higher than those of the dorsal and longer than the third dorsal spine. The caudal is deeply forked, equal to or a little shorter than the head. The pectoral is slender, nearly equal to the head without the snout.

Color in life dark red with a blackish red bar at the angle of the opercle; fins all bright pinkish red with a narrow violet margin to the dorsal, anal, and caudal. In alcohol the color is pale reddish yellow with a yellow longitudinal band from the opercle to the caudal peduncle, a broad black bar on the upper edge of the opercle, and a black blotch in the axil of the pectoral; a narrow blackish or dusky violet margin on the vertical fins and caudal; each scale on the upper part of the body margined by a vertical dusky violet bar; one or two longitudinal yellow stripes more or less evident on the belly.

Here described from the type, 86 mm. long, and five paratypes, 61 to 88 mm. in length, collected on the island of Moorea, one of the Society group.

#### Family SYNGNATHIDAE

##### ***Bombonia uxorius* sp. nov.**

*Type* from Waigiu Island. No. 17493 Field Museum of Natural History. Length 93 mm. June 6, 1929.

Dorsal 25; anal wanting; pectoral 15; caudal 6; rings 14 + 40. The dorsal is on the first six rings of the tail.

The slender, angulate, elongate body has a heptagonal trunk and a four-sided tail. All the plates are marked by numerous fine transverse ridges or striae and are also handsomely sculptured. On the belly is a conspicuous sharp keel. The operculum has a prominent median longitudinal keel, with many fine ridges radiating from it. There is a small median crest on top of the snout, a crest above the upper margin of each eye, and a short median longitudinal crest on the nape.

The short trunk is 4 to 4.4 times, the elongate tail about 1.5 times (1.48 and 1.52) in the total length. The head is 9.2 to 9.3 times in the length. The elongate snout equals the postorbital

portion of the head, 2.45 to 2.5 times in the head. The eye is 5 to 5.3 times, the caudal 2.8 to 2.85 times in the head.

The color in alcohol is dark brown, the abdominal keel and caudal fin black.

Here described from two specimens, 83 and 93 mm. in length. Both are males, each carrying many embryos nearly ready to emerge. The folds of skin forming the sides of the egg chamber are large and well developed. The specimens were taken in the mouth of a small fresh-water stream flowing into Majalibit Inlet, Waigiu Island.

This species conforms in every particular to my diagnosis of *Bombonia*, and is close to *Bombonia luzonica* Herre, described in the Philippine Journal of Science, 34, pp. 274-275, pl. 2, 1927.

***Micrognathus suvensis* sp. nov.**

*Type* from Suva Harbor, Viti Levu Island, Fiji. No. 17229 Field Museum of Natural History. Length 89 mm. March 13, 1929.

Dorsal 28; anal 3; pectoral 18; trunk rings 15; caudal rings 39-40. The 6 subdorsal rings are all caudal.

The greatest depth of the elongate attenuate body is 43.68 to 44.5 times in the length. The trunk is more or less heptagonal, the entire tail four-sided, the body everywhere with smooth edges. The shields are all transversely though very minutely striate. The head is 8.8 to 9.5 times in the length. The small eye is 6.5 to 7.75 times in the head. The stout straight snout is equal to or longer than the rest of the head, 2 or 1.9 times in the head, with a sharp median crest. The operculum has a well-developed straight median keel which extends entirely across, and has many radiating lines both above and below it. The tail is 2.36 to 2.57 times the trunk, or 1.7 to 1.76 times the head and trunk together. The caudal is 2.3 times in the head. There are no cutaneous appendages. The dorsal begins on the second caudal ring. The superior cristae of the trunk and tail and also their inferior cristae are discontinuous; the lateral median ridge of the trunk is continuous with the inferior crista of the tail.

The color in alcohol is whitish, everywhere darkened more or less by punctulations of excessively minute brown dots; snout dusky; the caudal fin blackish.

Here described from the type, 89 mm. long, and one paratype, 83 mm. long, both obtained in Suva Harbor.

This slender creature differs from the two species of *Micrognathus* given by Weber and Beaufort in the greater length of its snout,



the increased number of caudal rings and dorsal rays, the more posterior position of the dorsal, and the complete opercular keel.

*Suvensis*, from Suva, the capital of the Fiji Islands.

### Family MELANOTAENIIDAE

#### *Melanotaenia kabia* sp. nov.

*Type* from Nyaurangai, Sepik River, New Guinea. No. 17230 Field Museum of Natural History. Length 84 mm. May 22, 1929.

First dorsal I, 3 or I, 4, second dorsal I, 9 to 11; anal I, 17 to 20; 35 to 37 scales in a longitudinal series, plus 2 or 3 more on the caudal base, 15 in a transverse series, and 22 or 23 predorsal scales.

The body is strongly compressed, the ventral profile more convex than the dorsal outline, the upper profile concave from the nape to the tip of the snout. The depth is 2.45 to 2.7, the head 3.5 to 3.9, the caudal 3.4 to 3.85 times in the length. The eye and snout are equal or the eye is a very little shorter, 3.25 to 3.7 times, the inter-orbital 2.8 to 3, the least depth of the caudal peduncle 2.4 to 2.6 times in the head. The pointed pectoral equals the head without the snout, 1.3 to 1.4 times in the head, 4.7 to 5.1 times in the length.

The mouth has a slight downward curve in a front view, the jaws rarely equal but the lower usually projecting a hair's breadth, the posterior end of the maxillary never extending to a vertical from the eye but reaching anywhere from halfway between the nostrils to just behind the posterior nostril. The premaxillary overhangs the lower jaw laterally so that some of the teeth are visible. There is an outer row of stout conical teeth in the upper jaw with a few small teeth behind it at the front. The lower jaw has a band of small slender teeth at the front, passing into a single row posteriorly. There is a small patch of minute teeth on the vomer and a row of like teeth on the palatines. The tongue is smooth. There is a single row of scales below the eye or two rows under the rear half of the eye. The opercle is covered with medium-sized scales with a patch of smaller ones above. The first and second dorsal spines are stout, short, about equal in length, 1.5 to 1.6 times in the postorbital part of the head. The anal spine is very short, more than twice in the postorbital part of the head. The length of the anal base is more than the distance from the first dorsal origin to the axil of the second dorsal. The origin of the anal is opposite to or very slightly in advance of the dorsal origin. The dorsal and anal rays are low, the last ray of the second dorsal about twice in the head, the first

dorsal and anal a little higher, 1.33 to 1.5 times in the head. The pointed, elongate ventral extends past the anal spine to the base of the first or second anal ray. The caudal is forked, with pointed lobes, the lower one longer. The scales are crenulate posteriorly. The caudal base is covered with small scales which form a dense sheath over the basal fourth of the fin.

In life the color is dusky silvery above, the lower half with alternate vertical stripes of golden orange or deep orange and silver or steely blue, with an orange band at the caudal base. The top of the snout and interorbital are black, the opercles and preopercles silvery with yellow or golden. The fins are more or less dusky in some, in others the membranes of the dorsal and anal are orange, wholly or only basally, the rays and outer part blackish. In alcohol the color is dusky above, with numerous (8 to 12) vertical blackish stripes, the lower half more or less yellowish, with a silvery sheen over all. A blackish or steel blue line extends from the upper angle of the gill opening to the middle of the caudal base. The cheeks are silvery white. The ventrals are yellow, the other fins more or less dusky; all may be dusky. The lower half of the dorsal is usually black.

Specimens from Koragu have nearly all lost the vertical blackish stripes, the color bluish gray to brownish above, the scales with dusky margins, the lower half paler to yellowish, the top of the snout and interorbital black, the opercle blackish, the preopercle gray. The longitudinal stripe is evident on the posterior half. All the fins are more or less dusky, the caudal often palest.

Described from the type, 84 mm. long, six paratypes, 67 to 73 mm. long, from Nyaurangai, and twenty-six paratypes, 53 to 83 mm. long, from Koragu.

*Kabia*, from *kabi*, the native name at Koragu.

***Melanotaenia rosacea* sp. nov.**

*Type* from Koragu, Sepik River, New Guinea. No. 17245 Field Museum of Natural History. Length 84 mm. May 23, 1929.

Dorsal I, 4–I, 8 or 9; anal I, 17 to 19; pectoral 12 or 13; there are 36 to 38 scales in a longitudinal series, 15 in a transverse series, and 25 (less often 24, rarely 23) predorsal scales.

The form is deep, strongly compressed, the dorsal and ventral profiles both convex but the ventral profile more curved. The anterior dorsal profile is concave on top of the head. The depth is 3 to 3.2, the head 3.33 to 3.7, the caudal 3.5 to 3.75 times in the length. The eye is large, circular, 3.1 to 3.66, the interorbital 2.9



to 3.1 times in the head. The snout equals the eye. The least depth of the caudal peduncle is 2.6 to 2.9 times in the head and 1.33 to 1.6 times in its own length. The pointed pectoral is shorter than the head without the snout, 1.4 to 1.55 times in the head, 5 to 5.6 times in the total length.

The mouth curves downward slightly when viewed from in front, the jaws equal or the lower jaw projecting very slightly, the mouth not extending to a vertical from the posterior nostril, the lateral limb of the premaxillary overhanging the lower jaw so that the teeth on it are visible. There is an outer row of strong, conical, pointed teeth above and below, with a band of very much smaller needle-like teeth behind at the front of each jaw. There is a patch of very small teeth on the vomer, and a row of small teeth on the palatines. The tongue is smooth. There are two rows of scales below the eye, or at least two rows under the rear half of the eye. The opercle is covered with medium-sized scales, those of the anterior and upper rows smaller than the rest. The first and second dorsal spines are stout, curved, equal, or the second dorsal spine longer, longer than the postorbital part of the head, their length reaching from the hind margin of the eye upon the pectoral base. The anal spine is much shorter than the postorbital part of the head, equal to or but little longer than the eye. The length of the anal base is usually more than the distance between the first dorsal origin and the axil of the second dorsal, rarely equal to it. The anal origin is usually opposite that of the dorsal, rarely one scale before the dorsal origin. The dorsal and anal rays are low, about twice in the head. The caudal is forked, with pointed lobes. The scales are conspicuously crenulate posteriorly.

In life a roseate golden luster is conspicuous on the opercles. In alcohol the color is dusky gray above, each scale with a darker margin, becoming pale bluish gray on the middle of the sides, bluish gray or pinkish on the belly. The opercle is dusky or brownish. The fins are all more or less dusky or blackish, or the ventrals may be nearly colorless. The caudal may be merely gray, but the inner margins of the lobes are always black.

The type, 84 mm. long, and thirty-two paratypes, 33 to 76 mm. in length, were collected at Koragu, on the Sepik River, New Guinea.

Nine paratypes, 65 to 72 mm. in length, were obtained at Nyaurangai. These last specimens are brownish or yellowish in alcohol, darker above and paler below, with a silvery luster over all. On the posterior half of the body is a more or less evident median

longitudinal dark steel-colored line or band. All the fins are darkened by minute black specks, the pectorals and ventrals sometimes being nearly colorless.

This species is close to *M. multisquamata* Weber and Beaufort, but differs in several particulars.

**Rhombosoma sepikensis** sp. nov.

*Type* from Marienberg, Sepik River, New Guinea. No. 17265 Field Museum of Natural History. Length 107 mm. May 10, 1929.

First dorsal I, 3 or 4; second dorsal I, 14 or 15; anal I, 21 to 23; pectoral I, 11 to 13; there are 35 to 37 scales in longitudinal, 10 to 12 in transverse series, and 16 predorsal scales.

The body is much compressed, the ventral profile strongly convex, the back little elevated in young specimens, the dorsal profile descending in a long gently sloping straight line from the dorsal origin to the interorbital, concave from there to the tip of the snout. In large specimens the back is more elevated, in a regular, moderately high arc from the hind margin of the opercle to the caudal peduncle, the interorbital and snout concave.

The depth is 2.6 to 3, the head 3.66 to 3.8, the caudal 4.4 to 4.5 times in the length. The eye is 3.66 to 3.8, the snout 2.9 to 3.1, the least depth of the caudal peduncle 2 to 2.13 times in the head. The eye is a little shorter than the snout, which is twice in the post-orbital part of the head. The jaws are equal or the upper jaw may project, the lower jaw then inferior. The angle of the maxillary may reach a vertical from the front margin of the eye, but usually falls some distance short of it. There are several rows of pointed teeth on the jaws, largest in the upper jaw, extending to the outside of the thickened lips and posteriorly above to the angle of the jaws. There is a patch of small teeth on the vomer, a patch of minute teeth on the base of the tongue, and a row of small teeth on the palatines. There are two rows of scales under the eye. The opercle is covered with medium-sized scales, with two rows of smaller scales on the upper end.

The first dorsal spine is stout, 1.5 times in the head without the snout, a trifle longer than the second dorsal spine. The anal spine equals or is a little less than the second dorsal spine. The length of the anal base equals or is a little less than the distance from the first dorsal origin to the axil of the second dorsal. The origin of the anal is opposite that of the dorsal. The pointed pectoral equals the head without the snout. The depth of the caudal peduncle

slightly exceeds its own length. The caudal is emarginate with rounded lobes. The scales appear entire along their rear margin, but if examined under a good lens after drying they are seen to be crenulated. The basal fourth of the caudal is covered with a sheath of small scales.

In life this little fish has a brilliant metallic luster, bronze, silver, and reddish according to the way the light strikes it, with a conspicuous red flame-colored spot on the opercle. In alcohol the color is dusky or dark brown above, each scale with a pale dusky gray center and blackish margins, the lower part whitish or sometimes pinkish, with a silvery luster. From the tip of the snout a black stripe crosses the eye and runs back to the middle of the caudal base, becoming a wide band on the posterior half where it is one and a half or two scales wide; below this a white band extends from the angle of the pectoral to the caudal base, very conspicuous on the posterior half of the body; bordering the white band below, and above the anal, is a more or less evident black stripe. The fins are all dusky, or the ventrals may be colorless.

Described from the type, 107 mm. long, and thirteen paratypes, 34 to 92 mm. long, collected from a brook tributary to the Sepik River at Marienberg, New Guinea.

This belongs near *R. goldei*, but seems to be different.

#### Family ATHERINIDAE

##### *Atherina ovalaua* sp. nov.

*Type* from Ovalau Island, Fiji Islands. No. 17272 Field Museum of Natural History. Length 48 mm. March 20, 1929.

Dorsal VII–II, 8; anal II, 8 or 9; pectoral I, 14; scales in lateral series 40 to 42, in transverse series 7; predorsal scales 14 to 16; 7 or 8 scales between dorsals; 22 to 25 gill rakers on lower arch.

The depth of the subcylindrical body is from about 5.9 to 6.2 times in the length. The greatest breadth is 1.17 to 1.26 times in the depth. The head is 3.64 to 3.84 times in the length, bluntly pointed, flattened above, the snout convex. The large prominent eye is 2.75 to 3 times in the head, distinctly shorter than the post-orbital part of the head. The snout is shorter than the eye and equals the interorbital space. The maxillary is less than the eye and extends beneath the anterior margin of the eye. The teeth are minute. The origin of the first dorsal is opposite the sixteenth scale, midway between the caudal base and the front of the eye or, exceptionally,



farther forward. The origin of the second dorsal is opposite the twenty-fifth or twenty-sixth scale. The length of the caudal peduncle is about 1.6 times in the head, its depth 2.37 times in its own length. The caudal is shorter than the head. The pectoral is 1.5 to 1.6 times in the head. The anus is between the ventral tips, about two scales before a vertical from the first dorsal origin. The ventral is 2.1 to 2.3 times in the head. The origin of the second dorsal is about a third behind the anal origin.

The color in alcohol is brownish white, the scales of the back outlined with dark brown crescents and lines; a broad dark silvery or leaden band from the insertion of the opercle to the caudal; usually a row of dots below it; a blue black spot on the occiput with a blackish line extending along the middle of the back to the origin of the caudal; a large blackish brown spot on the opercle; the interorbital space and the upper margin of the eye blackish blue; the top of the snout and the tip of the lower jaw more or less dusky.

Here described from the type and twenty paratypes, 40 to 52 mm. in length, collected by me by the aid of electric light at Ovalau Island, Fiji Archipelago.

I also place here forty specimens from 28 to 66 mm. in length, from Suva Harbor, Viti Levu Island, Fiji. These specimens are all much paler, having faded to pale whitish yellow, with a very bright silver band down the side, and the dorsal scale markings have largely disappeared; the opercle, preopercle, and suborbital are also bright silver; a blue black spot is on the upper margin of the eye; the tip of the snout is dusky, with dark specks.

#### Family APOGONIDAE

##### *Apogon abo* sp. nov.

*Type* from Koragu, Sepik River, New Guinea. No. 17307 Field Museum of Natural History. Length 125 mm. May 23, 1929.

Dorsal VI-I, 9 or 10; anal II, 9; pectoral II, 13; there are 32 or 33 scales in the lateral line to the caudal base plus 7 or 8 more on the latter; 5 above and 12 below the line; predorsal scales 12.

The depth is 2.75, the head 2.35, the caudal 4, the pectoral 5 times in the length. The eye is 5.4, the snout 4, the interorbital 5.3, the premaxillary 1.95, the least depth of the caudal peduncle 2.65 times in the head.

The thick, heavy body is compressed, the head large, the anterior dorsal profile with a decided hump behind the head, the top of the head concave, the eyes projecting above the profile. The mouth is large, strongly oblique, the chin scarcely projecting, the maxillary extending beneath the hind margin of the eye or beyond. The teeth are in six or seven rows in the jaws, forming a fine band both above and below. There are three rows of small teeth on the vomer and a single row on the palatines. A very few minute teeth may be observed on the posterior and lower edges of the preopercle by removing the epidermal or cutaneous flap, the bones of the head otherwise smooth. The stout second dorsal spine is twice the eye. The other spines are all weak. The spine of the second dorsal is also weak, equal to the anal spine, longer than the eye, about 4 times in the head. The caudal is rounded, not emarginate.

The color in alcohol is brownish above, paler to whitish below, with more or less silvery luster on the sides; there are 12 or 13 narrow black stripes running diagonally downward and forward along the side, the first stripe below the origin of the first dorsal, the last two nearly vertical and situated on the caudal peduncle. A blackish stripe runs from the eye to the upper margin of the opercle and a wide black band extends from the lower margin of the eye to the lower edge of the preopercle just behind the end of the maxillary. All the fins are more or less dusky, or the pectorals, anal, and ventrals may be colorless. In life the type was dark olive green above the lateral line, bright brassy yellow on the sides, the belly yellow, with gleams of violet and lavender on the opercles and preopercles; the black stripes were as given already, and very conspicuous; the pectoral was hyaline, the other fins all yellowish and faintly dusky.

Described from the type, 125 mm. long, taken at Koragu, a village on the Sepik, and a paratype, 86 mm. long, seined from a brook at Marienberg. I also have four specimens, 22 to 30 mm. long, from Marienberg, and one, 43 mm. long, from Ambot, on the Kerame River, New Guinea.

The name of this fish is *abó* at Koragu.

***Mionorus pacificus* sp. nov.**

*Type* from Tagus Cove, Albemarle Island, Galapagos Islands. No. 17311 Field Museum of Natural History. Length 29 mm. January 8, 1929.

Dorsal VI-I, 9; anal II, 8; pectoral 11; scales 2-24; gill rakers 7 or 8.

Depth a trifle more than 3 times in the length, the head about 2.7 to 2.9 times. The eye is about 2.7 times in the head, 1.5 to 1.66 times the snout, which is 4 or a little more than 4 times in the head.

Head and body compressed, the head bluntly pointed, with prominent lower jaw. The eyes are large, a little more than inter-orbital. The mouth is oblique, the maxillary extending beyond the pupil but not to the posterior margin of the eye. The jaw teeth are in narrow bands. The caudal is truncate, narrow, 3.5 to 3.6 times in the length. The pectoral is about twice in the head. The ventrals are twice in the head, not reaching the anal fin. The position of the anus varies from beneath the posterior third of the ventrals to just before the anal fin.

Color in life red with silvery metallic luster, the scales on the upper third of the body margined with minute dark specks; a dusky band from the tip of the snout through the eye to above the pectoral; a short vertical blackish bar below the anterior third of the soft dorsal, extending below the lateral line; fins unmarked. In alcohol the red has changed to pale yellowish. The scales are very deciduous so that the markings have disappeared on all but one specimen.

Here described from the type, 29 mm. long, and three paratypes, from 25 to 29.5 mm. in length, collected at Tagus Cove, Albemarle Island, Galapagos Archipelago. The specimens were taken in a trap at a depth of 10 meters or more.

#### Family KUHLIIDAE

##### ***Kuhlia bilunulata* sp. nov.**

*Type* from river flowing into Suva Harbor, Viti Levu Island, Fiji Islands. No. 17313 Field Museum of Natural History. Length 84 mm. March 13, 1929.

Dorsal X, 11; anal III, 10 or 11; lateral line 48, with 5 or 6 more tubules on the caudal base; 5 scales between the origin of the dorsal and the lateral line, 10 from the anal origin to the lateral line; 10 or 12 predorsal scales; 22 gill rakers on the lower limb of the first arch.

The depth of the laterally compressed body is 2.6 times in the length, greatest at the origin of the dorsal, the anterior upper profile descending in a steep straight line to the tip of the snout. The lower jaw is projecting, the ventral profile in a broad regular curve. The



head is longer than deep, 2.9 times in the length, much thicker than the body, its breadth about 1.75 times in its own length. The eye is high up, 2.33 to 2.6 times in the head. The broad, flat interorbital is about 0.8 of the eye, 3 to 3.25 times in the head. The broad, short snout is 3.2 to 3.4 times in the head. The mouth is markedly oblique, the posterior end of the maxillary beneath the front margin or anterior third of the eye. The preopercle is smooth behind, its lower margin very minutely serrulate. The opercle is entire, with two flat and rather stout spines, the lower one the stronger. The fifth dorsal spine is longest, 1.6 times in the head. The tenth spine is much longer than the ninth, 2.4 to 2.6 times in the head, the third anal spine approximately equaling it. The first dorsal ray nearly equals the first spine, the others are progressively shorter. The first anal ray equals the third anal spine; the rest form a descending series. The depth of the caudal peduncle is 2.7 in the length of the head. The deeply forked caudal is a little shorter than the head. The pointed ventrals are 1.7 times in the head, their tips extending to the anus. The pectoral is 1.5 to 1.6 times in the head.

In alcohol the color is dusky along the dorsal region, becoming paler on the sides and passing into yellowish ventrally. The spinous dorsal is blackish and there is a submarginal black bar on the dorsal rays. The caudal is white with a broad black basal crescent and another black subcrescentic marginal band which fades into whitish on the extreme tip of the fin. The anal is more or less dusky on its basal half, with a white or colorless margin. The other fins are colorless or yellowish.

Here described from the type, 84 mm. long, and seventeen paratypes, 21 to 61 mm. long, obtained from a small river flowing into Suva Harbor, Viti Levu Island, Fiji Islands.

The caudal markings are unlike those of any described *Kuhlia*. *Bilunulata*, in allusion to the crescents on the caudal fin.

#### Family SERRANIDAE

##### ***Anthias mooreanus* sp. nov.**

*Type* from Moorea Island, Society Islands. No. 17325 Field Museum of Natural History. Length 63.5 mm. February 23, 1929.

Dorsal X, 16; anal III, 6; 54 scales in the lateral line, 6 between the first dorsal spine and the lateral line, 4 between the middle dorsal spines and the lateral line, and 15 between it and the origin of the anal.

The depth of the laterally compressed, somewhat ellipsoid body is nearly 3 times in the length, the dorsal and ventral profiles moder-

ately and almost equally convex. The small pointed head is 3.66 times in the length, the mouth oblique, with slightly projecting chin. The eye is 3.6 times in the head, longer than the snout, which is 4.4 times in the head. The broad interorbital is 3.4 times in the head; the maxillary extends to beneath the pupil, its expanded posterior two-thirds as wide as the eye. There is a pair of small outwardly curved canines at the symphysis and a pair of straight canines a little farther back in the upper jaw, all external and visible when the mouth is closed. There is a single row of coarse teeth in the upper jaw, and a row of fine teeth in the lower jaw, with a median hooked canine on each side. There is a patch of teeth on the vomer but apparently none on the palatines. The tongue is smooth. The posterior margin of the preopercle is serrated, the teeth enlarged at the angle, the interopercle not serrated marginally. The opercle bears two spines, the upper one much the larger. There are three or four small serrations on the lower part of the opercular margin and a few very small teeth on the subopercle. The entire trunk and head except the lips are covered with scales. The dorsals and anal have a low scaly sheath. The origin of the dorsal is a little behind the gill opening, the first spine less than half the second, increasing to the fourth, which is nearly 2.5 times in the head, the last six spines subequal. The soft dorsal is a little higher, 2.16 times in the head, pointed posteriorly. There is no notch between the dorsals. The third anal spine is longest, 2.88 times in the head, the third and fourth rays longest and equal to the soft dorsal. The depth of the caudal peduncle equals the soft dorsal. The lunate caudal is longer than the head, the tip of the lower lobe much elongated and thread-like and nearly 1.5 times the head. The pectoral equals the head. The pointed ventrals are a tenth shorter than the head and extend less than three-fourths of the distance to the anal.

The color in life was red, paler posteriorly, with two longitudinal bands, one extending back from behind the eye, the other from beneath the pectoral. In alcohol the color is olive brown above, paler to reddish brown below, the caudal pale yellowish, the soft dorsal dusky, the other fins all pale. A pale reddish stripe extends from behind the eye across the opercle, then downward and back along the middle of the side to the posterior third of the body. Another one starts under the lower angle of the pectoral and runs back to above the anal.

Here described from the type and only specimen, 63.5 mm. long, obtained on the reef at the island of Moorea, Society Islands.



This species is near *A. pleurotaenia*, but differs in shape, in the number of dorsal and anal rays, in the presence of two instead of three opercular spines, in the number of scales in the lateral line and in transverse series; the third dorsal spine is shorter and not longer than those behind it, and the color stripes are different.

*Mooreanus*, from the island of Moorea.

#### Family PEMPHERIDAE

##### ***Pempheris dispar* sp. nov.**

*Type* from Tenibuli, Ysabel Island, Solomon Islands. No. 17326 Field Museum of Natural History. Length 58 mm. April 18, 1929.

Dorsal V or VI, 7 or 8; anal III, 22 or 23; there are 59 or 60 scales in the lateral line plus 7 on the caudal base, 6 above and 15 or 16 below the line, and 29 or 30 predorsal scales.

The depth is 2.65 to 2.75, the head 2.75 to 2.8, the caudal 3.3 to 3.45, the pectoral 3.66 to 3.8, the length of the anal base 3.1 to 3.25 times in the length. The eye is 2.375 to 2.6, the snout 3.8 to 4.1, the interorbital 3.5 to 4, the least depth of the caudal peduncle 3.5 to 4 times in the head.

The mouth is oblique, with prominent chin, the maxillary extending beyond the middle of the eye. The lateral line is nearly straight. The edge of the preopercle is not serrate.

The color in alcohol is uniform yellowish brown except on the sides of the head and breast, which are darker brown. Before and beneath the ventrals is a blue black area. The tips of the caudal lobes are black, the fins otherwise yellowish to nearly colorless.

Described from the type, 58 mm. long, and seventeen paratypes, ranging down to 38 mm., collected at Tenibuli, Ysabel Island, Solomon Islands.

#### Family LETHRINIDAE

##### ***Gnathodentex oculo-maculatus* sp. nov.**

*Type* from Tenibuli, Ysabel Island, Solomon Islands. No. 17335 Field Museum of Natural History. Length 132 mm. April 17, 1929.

Dorsal X, 9; anal III, 8; there are 69 to 74 scales in the lateral line plus 5 or 6 more on the caudal base, 6 or 7 above the line and 15 to 17 below it; predorsal scales 12 to 14; 5 rows of scales on the preopercle.

The depth is 2.8 to 2.9, the head 2.9 to 3, the forked caudal 2.9 to 3.3, the pectoral 3.6 to 3.9 times in the length. The eye is

2.5 to 2.9, the snout 2.6 to 3.1, the interorbital 3 to 3.2, the least depth of the caudal peduncle 3 to 3.33 times in the head.

The body is elongate oblong, compressed, with pointed head, the upper profile more arched than the ventral outline, the very large and prominent eye impinging upon or even with the dorsal profile. The head is a little concave behind the eye, a little angulate at the interorbital, the snout convex, pointed, the mouth small, the maxillary 4 times in the head, not extending to beneath the eye. There is a pair of small anterior canines in the lower jaw. There is a coarsely toothed ridge on the upper maxillary. The preopercular margin is smooth. The dorsal spines are heteracanthous, the first 4.9 to 5.5 times, the fourth 2.85 to 3 times in the head. The third anal spine is 2.9 to 3.15 times in the head, the ventral 4.55 times to 4.45 times in the total length.

One specimen is reddish bronze with purplish reflections, very dark above the lateral line, paler below, with four dark reddish brown longitudinal stripes below the lateral line and six blackish oblique lines running up and back above the lateral line. Just below the lateral line is a pale glistening stripe, extending from the upper angle of the gill opening to beyond the pectoral tip. Most of the scales on the lower half of the body have a small white central spot, these spots forming longitudinal lines. The top of the head is deep dusky violet. On the top of the eye is a spot of the same color and below it is a short golden longitudinal bar. The dorsal and anal are colored like the body, the other fins nearly colorless.

Other specimens are brownish yellow with a very slight violaceous cast, with paler longitudinal lines along the center of each scale row and narrower darker lines between the scale rows. Just below the lateral line is a broader golden stripe extending from the upper angle of the gill opening back to about opposite the ninth dorsal spine. About four scale rows below this is another golden stripe (or rather indications of one) from the opercle to below the soft dorsal. There is a dusky spot on the upper side of the eye which evidently continued back to just above the origin of the lateral line but remains as a spot behind the eye, and another at the origin of the lateral line. On the upper part of the eyeball is a short longitudinal golden bar. The fins are all colored like the body.

Described from the type, 132 mm. long, and three paratypes, 101 to 120 mm. long, collected at Tenibuli, Ysabel Island, Solomon Islands.

This species is near *G. aureo-lineatus*, but comparison with specimens of the latter from several localities shows they are distinct in form, physiognomy, and color.

This handsome fish has the appearance of a *Holocentrus*, the head astonishingly so.

#### Family SCORPAENIDAE

##### *Sebastapistes badio-rufus* sp. nov.

*Type* from Takaroa Island, Tuamotu Islands. No. 17337 Field Museum of Natural History. Length 22 mm. February 12, 1929.

Dorsal XI-I, 8; anal III, 6; there are 22 tubulated scales in the lateral line, plus one on the caudal fin, 36 scales in a longitudinal row above the lateral line. There are 4 scales from the lateral line to the spinous dorsal origin and 9 to the anal origin.

The depth is 2.3, the head 2.1 times in the length. The eye is 3.3, the caudal 3.8, the interorbital 6 times in the head, and 1.8 times in the eye.

The body is compressed laterally, without flaps or dermal appendages. The mouth is large, extending beneath the posterior margin of the pupil. The preorbital has two spines, one directed forward, the other downward. There are no orbital spines, but two small ones behind the upper part of the eye. There are two pairs of nuchal spines. There are no nasal spines or tentacles. There are five spines on the posterior margin of the preopercle, three spines on the hind margin of the opercle and two small spines above it. The suborbital stay has a spine below the eye and terminates posteriorly in a spine.

In life the color was brownish red. In alcohol the color is pale reddish brown, the fins colorless.

Described from the type and only specimen, 22 mm. long, collected at Takaroa, Tuamotu Archipelago. This species is close to *S. bynoensis*, *S. tristis*, and *S. laotale*, but differs in having no cirri, tentacles, or dermal flaps, and no orbital spines.

#### Family POMACENTRIDAE

##### *Pomacentrus cranei* sp. nov.

*Type* from Tenibuli, Ysabel Island, Solomon Islands. No. 17338 Field Museum of Natural History. Length 68 mm. April 19, 1929.

Dorsal XIII, 14 or 15; anal II, 14 or 15; there are 25 scales in a longitudinal series, 15 tubulated scales in the lateral line plus 4

more with pores in the upper section, and 7 to 9 with pores in the lower section. There are 3 scales above and 9 below the lateral line. The snout is scaled to the nostrils, naked from there to the tip.

The form is deep, ovate, compressed, the dorsal and ventral profiles nearly alike; the depth is 1.9, the head 3.1 to 3.2 times in the length. The caudal and pectoral are only a little shorter than the head. The eye is 3.3 to 3.5, the snout 3, the least depth of the caudal peduncle 2 to 2.1 times in the head. The interorbital sometimes equals the eye, sometimes the snout. The mouth is small, the jaws equal, the maxillary not quite reaching a vertical from the front margin of the eye. The dorsal spines increase in length to the last, which is 1.5 to 1.66 times in the head. The dorsal and anal rays are much higher than the spines, the fin angulate posteriorly. The ventrals are elongate, with filiform tips extending to the second anal spines.

In life the color is brown with a blue spot on each scale of the opercle, a vertical blue line on each scale below the lateral line, and a blue spot on each scale of the anal sheath. Beyond the end of the lateral line is a large pale spot extending upon the lower part of the soft dorsal from the fourth to the seventh, or third to sixth rays. The caudal is yellow or pale, the other fins all black or dusky.

In alcohol the color is very dark brown, the blue lines and spots fading or disappearing, the pale spot on the base of the soft dorsal dusky yellowish or pale brown. There is a blue black circular spot on the opercle before the origin of the lateral line, and a small black spot at the upper angle of the pectoral base. The caudal is yellowish or very pale, the other fins black or dark brown.

Described from the type, 68 mm. long, and two paratypes, 62 and 64 mm. long, from Tenibuli, Ysabel Island, Solomon group, and two paratypes, 55 and 66 mm. long, from Hathorn Sound, New Georgia Island, Solomon group.

Named for Mr. Cornelius Crane, head of the Crane Pacific Expedition.

#### Family LABRIDAE

#### *Halichoeres fijiensis* sp. nov.

*Type* from Ovalau Island, Fiji Islands. No. 17341 Field Museum of Natural History. Length 51 mm. March 20, 1929.

Dorsal IX, 11 or 12; anal III, 10 or 11; scales in lateral line 27 or 28, in transverse series 3 above and 8 below the lateral line; predorsal scales 9 or 10.



The depth of the laterally compressed body is 3.25 to 3.3 times, the head 3.4 to 3.5 times in the length. The dorsal and ventral profiles of the head are alike, the lips even, the eye 3.3 to 3.5 times in the head, equal to the interorbital, and shorter than the pointed snout, which is 2.7 to 2.8 in the head. The dorsal is low, the rayed portion highest, about 1.5 times the eye, the anal a trifle lower. The bluntly rounded caudal is 5.25 to 5.45 times in the length, the depth of the caudal peduncle 2.3 times in the head. The pectoral is 5.1 times, the ventral 7 to 7.3 times in the length.

The color in alcohol is uniform bluish gray except on the under side of the head, which is yellowish white, each scale with a large pearly or white ocellated spot with a narrow dark brown margin, the spots forming longitudinal rows. The head is paler with a vertical blue or blue black bar behind the eye, and two horizontal bars or numerous short bars and spots running back from it. A blue bar extends from the eye to the tip of the snout and two or more broad blue or pearly bars cross the cheek irregularly, one usually extending diagonally from the angle of the mouth up to the eye and backward beneath it. There is a small blue black ocellus, white-margined, between the first and second dorsal spines, a very large blue black ocellus with wide white margin between the first and third dorsal rays, and a similar small ocellus on the caudal peduncle above the lateral line. The dorsal has from two to several rows of whitish dark-margined ocelli. The anal has two rows of similar ocelli which may fuse to form irregular bars or spots. The caudal is cross-barred by several rows of similar ocelli, which may fade entirely. The pectoral and ventral are colorless or whitish. In life all the ocelli are red.

This handsome species is close to *H. argus*, but differs in having large conspicuous blue black ocelli on the dorsal fin and caudal peduncle; furthermore, it lacks the dark band from the head to the caudal and the series of four or five light spots on the back characteristic of *H. argus*; from *H. binotopsis* or *H. leparensis*, which it resembles in some respects, the longitudinal rows of large ocelli on the trunk sufficiently distinguish it, while it lacks their dark cross-bars on the trunk. It has no dark bar at the pectoral base as in *H. binotopsis* and does not have the silvery white longitudinal lines of *H. leparensis*.

Here described from the type, 51 mm. long, and eleven paratypes; 28 to 57 mm. in length, obtained on the reef at Ovalau Island, Fiji Archipelago.

***Thalassoma cranei* sp. nov.**

*Type* from Tenibuli, Ysabel Island, Solomon Islands. No. 17347 Field Museum of Natural History. Length 89 mm. April 16, 1929.

Dorsal VIII, 13; anal III, 11; there are 26 scales in the lateral line, plus one more on the caudal base, 4 above and 9 below the line; the head is entirely naked.

The depth is 3.5, the head 3.3 to 3.5, the caudal 4, the pectoral 4.7 to 5 times in the length. The eye is 4.9, the snout 3.3 to 3.5, the interorbital 3.9 to 3.95, the least depth of the caudal peduncle 1.75 to 1.8 times in the head.

The body is oblong, compressed, the anterior dorsal profile regularly arched. The thoracic scales are smaller than those on the sides of the trunk. The scaly sheath on the dorsal is rather high, that on the anal lower.

The color in alcohol is brown, the dorsal region darker, paler below and whitish on the belly, with a darker vertical bar or streak at the base of each scale. The head is much darker than the body with dark purplish or violet bands on it as follows: a downward curved interocular band; another from the middle of the front margin of the eye to the tip of the snout and curving over to unite with a like band from the other eye; two bands from the posterior margin of the eye, curving upward and then down to the opercular margin before the pectoral; another band beginning beneath the eye and curving back to the opercular margin near the throat; above this band a purplish line from the preopercle to the hind margin of the opercle. On the base of the dorsal, extending from the second to the fourth rays, is a large blackish brown spot. On the base of the caudal peduncle is a very large blackish brown blotch. The dorsal is whitish or colorless with a median longitudinal band of brown and cross-bands of the body color extending up to the median band. The anal has a broad basal band of deep violet, the remainder of the fin white. The pectoral is yellow, fading to white, with a median longitudinal brown band and a blackish spot at the top of the pectoral base. The caudal is yellow, becoming colorless along the middle of the posterior part. The ventrals are yellow.

Here described from two specimens, a paratype 73 mm. and the type 89 mm. long, the smaller one from Auki, Malaita Island, and the other from Tenibuli, Ysabel Island, both of the Solomon group.

This handsome little labrid is near *T. lutescens* but is markedly different in the presence of the caudal and dorsal spots as well as presenting some differences in proportions.

Named for Mr. Cornelius Crane, who headed the Crane Pacific Expedition and made possible the ichthyological collections from the South Seas.

Family ELEOTRIDAE

*Alepideleotris* gen. nov.

Type, *Alepideleotris tigris* sp. nov.

Body entirely naked, without a trace of scales, laterally compressed, the head flattened; dorsal VII-1, 11; anal I, 10. Teeth pointed, in bands. Those of outer row in upper jaw strongly enlarged, curved, fixed, followed by four rows of much smaller depressible teeth. Lower jaw with an outer row of six strongly enlarged curved fixed teeth, like those in the outer row above, then three rows of smaller erect fixed teeth, and an inner row of large curved widely spaced depressible teeth. No teeth on vomer or palatines. The tongue is notched. The gill opening is confined to the base of the pectoral. The isthmus is broad. Branchiostegals 5.

The genus *Gymneleotris*, to which *Alepideleotris* seems closest, has scales on the posterior part of the body. *Heteroleotris*, often reported as naked, has ctenoid scales.

*Alepideleotris tigris* sp. nov.

Type from South Seymour Island, Galapagos Islands. No. 17348 Field Museum of Natural History. Length 39 mm. January 12, 1929.

Dorsal VII-I, 11; anal I, 10; depth 4.875, head 3.5 times in length. Eye 3.9 times, snout 5.5 times, maxillary 2.75 times in head.

The body is laterally compressed, the head depressed, the dorsal profile highest at origin of dorsal. The head is large, flat above, its breadth 1.7 times in its length. The eyes are rather large, latero-dorsal, very close together, their margins touching. The snout is blunt, with a median hump, the lower jaw projecting. The mouth is large, terminal, the maxillary extending to beneath the posterior part of the eye. Teeth are as given for the genus. Tongue is notched. The dorsals are well separated, the longest spine about 1.7 times in the depth. The second dorsal is nearly uniform, higher than the spinous portion, about 1.5 times in the depth. Anal is low except next to last ray, which equals length of soft dorsal rays. Length of pectorals is about 0.87 of the head, extending as far as the posterior end of the first dorsal. Origin of ventrals is a little in advance of the pectorals, much shorter, about 0.68 of the head, their pointed tips falling far short of the anus. Anal papilla is subglobose.



Color in alcohol brown, with six broad saddle marks of dark brown, contrasting alternately with bands of the ground color; dark brown spots along the side, each spot of two vertical bars; top of head with a broad dark brown transverse band; sides of head mottled with pale and dark brown. Spots and flecks of the paler ground color appear in the darker brown so that the whole body and head are brindled. The belly and throat are pale brownish. There is a dark brown bar at base of caudal and a dark brown spot on upper part of pectoral base. The fins are all brownish.

Here described from the type and only specimen, 39 mm. long, obtained from a tide pool at South Seymour Island, Galapagos Islands.

**Boroda malua** sp. nov.

*Type* from Malu, Sepik River, New Guinea. No. 17349 Field Museum of Natural History. Length 333 mm. May 19, 1929.

Dorsal VI-I, 9; anal I, 8; there are 62 to 68 scales in a longitudinal, 19 to 22 in a transverse series, and about 52 before the dorsal.

The body is thick, wedge-shaped, robust, becoming exceedingly thick and bulky with age, little elevated, the breadth equaling the depth, 4 to 5 times, the head 2.55 to 2.7 times in the length. The head is broad, low, depressed, the cheeks becoming swollen with age, its breadth then 1.5 times in its length, the upper profile concave between the nape and the snout, with a big bony hump near the tip. The small eyes are lateral but high up, their upper rim on the dorsal profile, 8.25 to 11 times in the head, 2.2 to 3.6 times in the broad interorbital, and 2 to 3 times in the wide, bluntly rounded snout. The lower jaw projects very strongly so that its teeth are exposed when the mouth is closed. The teeth are in broad bands in both jaws, the outer row enlarged, about 9 rows in the upper jaw. There are 6 rows in the lower jaw anteriorly, the inner row enlarged also and becoming very large posteriorly, where the band decreases to only two rows. There are no palatal, vomerine, or lingual teeth. The anterior nostril is tubulated, very close to the upper lip. The posterior nostril is very large. The large mouth is strongly oblique, the maxillary extending to the posterior margin of the eye or beyond, 2.5 times in the head. There are large sensory pores by each nostril, on top of the head, on the supraopercular groove, and on the pre-opercular margin. The entire body except the tip of the snout, the lips, the underside of the lower jaws and the space between them, is covered with ctenoid scales, which become



cycloid before the dorsal and on the head. The caudal is covered for one-half or two-thirds its length with small to minute scales. The pectoral base is covered with small scales which become minute and extend almost to the pectoral tip.

The vertical fins are low, with no elongated spines or rays, and fall short of the caudal when depressed. The third, fourth, and fifth dorsal rays are equal in length or nearly so, 3.15 to 3.3 times in the head. The fifth to the eighth rays of the soft dorsal are longest, 2.25 to 2.65 times in the head. The anal is a little lower, its posterior rays 2.5 to nearly 2.9 times in the head. The broad pectoral is 2 to 2.5 times in the head. The least depth of the broad thick caudal peduncle is 2.5 to 3 times in the head. The broadly rounded caudal is about 1.5 times in the head. The ventrals are much shorter than the pectorals, reaching a little more than halfway to the anal origin, 2.2 to 2.4 times in the head.

In life the color was uniform dark brown or blackish, with faint longitudinal lines on the back and sides. The fins were dark brown or blackish on the rays, the membranes dusky violet or blackish. In alcohol the color is blackish or dark brown, becoming black on the top and sides of the head, the belly and throat paler to purplish or yellowish brown. Each scale has a darker center, these forming faint but distinct blackish longitudinal rows. The fins are all violaceous black or dusky, the dorsals clouded or marbled. The smallest specimen has the dorsal spines and rays spotted with yellowish, the membranes clear blackish violet.

Here described from the type, 333 mm. long (436 including the caudal and lower jaw), and six paratypes, from 203 to 280 mm. in length, taken at Malu, a village on the upper Sepik River, New Guinea, 230 miles from the sea. I also place here four young specimens, 31 to 42 mm. in length, obtained from a brook at Marienberg, New Guinea.

#### Family GOBIIDAE

##### *Macgregorella badia* sp. nov.

*Type* from Ovalau Island, Fiji Islands. No. 17373 Field Museum of Natural History. Length 41 mm. March 19, 1929.

Dorsal VI-1, 10; anal I, 7; scales in longitudinal series about 45, in transverse series 18 or 20; predorsal scales about 20, very small, obscure, and difficult to make out.

The depth of the low, elongate, laterally compressed body is 6 to 6.3 times in the length, the broad, depressed head 3.4 to 3.7

times. The breadth of the head is 1.3 to 1.4 times its own depth. The eyes are on top of the head, very close together, their inner margins almost touching, 3.3 to 3.4 times in the head. The lips are even, the mouth small, oblique, the angle of the maxillary not extending to a vertical from the front of the eye. The teeth are as given for the genus. The snout, sides, and top of the head are marked by numerous short transverse small black ridges, some behind the eyes being longitudinal, in the fashion characteristic of the genus. The body is covered with scales, much larger and ctenoid posteriorly, small to very small anteriorly and cycloid, the scales more or less irregularly arranged. The head, breast, and pectoral base are all naked. The first dorsal is low, its height 1.8 in the length of the head, reaching the second dorsal when depressed. The second dorsal is highest in its posterior portion, the longest ray about 1.5 times the first dorsal. The caudal peduncle is a little longer than deep, its depth 2.3 times in the head. The very long, pointed caudal is 2.25 to 2.4 times in the length, and half again as long as the head. The long, pointed pectoral is about 1.3 times the head and less than 3 times in the total length. The pointed ventrals are 4.1 to 4.2 times in the length.

The ground color in alcohol is whitish, punctulated with minute brown dots and cross-barred by four broad reddish brown bands, the first behind the pectorals, the last at the base of the caudal. In the larger specimen these are connected by a faint median longitudinal brown bar. There are five broad reddish brown bars across the back, the first behind the eyes, the second between the pectorals, the last at the rear part of the second dorsal. The fins are all cross-barred or mottled with alternate bands of brown or black and white, or with spots of black and white.

Here described from the type, 41 mm. long, and the paratype, 34 mm. long, collected on the reef at Ovalau Island, Fiji group. This distinct and handsome species is an unexpected addition to a genus heretofore known only from two species occurring in the Philippine Islands.

***Macgregorella santa* sp. nov.**

*Type* from Hog Harbor, Espiritu Santo Island, New Hebrides. No. 17374 Field Museum of Natural History. Length 48 mm. April 1, 1929.

Dorsal VI-I, 10 or VII-I, 9; anal I, 8; there are 45 scales in a longitudinal series, plus 3 more on the caudal base, and 14 to 16 in a transverse series; predorsal scales 14 to 18.

The depth is 6.25 to 6.5, the head 3.66 to 4, the pointed caudal 3.1 to 3.25, the pectoral 4 to 4.25 times in the length. The eye is 5.25 to 6, the snout 3, the interorbital 6, the least depth of the caudal peduncle about 2.2 times in the head.

The low elongate body has the posterior half laterally compressed, the head somewhat flattened above. The eyes are well separated, dorso-lateral. The blunt snout is broadly rounded. The wide mouth is oblique with prominent chin. The posterior angle of the maxillary is concealed by a broad fold of the lips, but does not extend much over halfway to a vertical from the front of the eye. The snout, sides, top, and underside of the head are marked by many short, black ridges and flaps of tissue, some of them simulating short barbels. The body is covered with cycloid scales, largest posteriorly, those on the breast and pectoral base minute, the head naked. The first dorsal is rather low, 1.55 to 1.65 times in the head, scarcely reaching the second dorsal when depressed. The second dorsal and anal are highest posteriorly, often reaching the caudal when depressed, 1.5 times in the head.

The color in alcohol is yellowish white overlaid with brown, darkest above, the ground color showing through as small pale spots on the sides. A blackish brown band extends from the snout back over the eye and usually along the side as far as below the middle of the soft dorsal or beyond, the anterior third much darker than the rest. Above the pectoral is a broad blackish brown cross-band connecting the longitudinal bands. A second cross-band lies opposite the middle of the second dorsal. A blackish brown stripe runs from the eye diagonally down and back across the cheek. The opercles are covered by a large brown spot and the rest of the head is more or less spotted with brown. The caudals are more or less dusky or brown spotted, and the anal varies from whitish to dusky. The pectoral base is heavily spotted with brown as is also the lower half of the fin, the outer portion paler to colorless. The ventrals are more or less lightly spotted with brown.

Twelve specimens, 15 to 50 mm. in length, were taken at Hog Harbor, Espiritu Santo Island, New Hebrides, one, 48 mm. long, being taken as the type. Ten specimens, 12 to 42 mm. long, were collected at Bushman Bay, Malekula Island, and one, 41 mm. long, at Malo Island, New Hebrides. A specimen, 18 mm. long, was taken at Tenibuli, Ysabel Island, Solomon Islands, and three specimens, 12 to 22 mm. long, at Hathorn Sound, New Georgia Island, in the same group.

Named from the island, Espiritu Santo, commonly called Santo.



**Gnatholepis corlettei** sp. nov.

*Type* from Bushman Bay, Malekula Island, New Hebrides. No. 17367 Field Museum of Natural History. Length 24 mm. April 4, 1929.

Dorsal VI-I, 11; anal I, 9; there are 26 scales in a longitudinal series, plus 2 on the caudal base, and 10 in a transverse series, and 11 predorsal scales.

The depth is 4, the head 3.4, the caudal 3.4, the pectoral 4 times in the length. The eye is 3.2, the snout 3.33, the least depth of the caudal peduncle 2.5 times in the head.

The compressed body is heavy anteriorly, the dorsal profile arched, and highest at the origin of the spinous dorsal. The snout is arched, the mouth small, the posterior extremity of the maxillary barely extending beneath the front margin of the eye. The teeth are minute, the jaws without canines. The ctenoid scales are loosely attached, those on the preopercle in three rows.

The color in alcohol is yellowish gray with three dusky bands on the lower half of the side, the first behind the pectoral, the last just at the pectoral tip when depressed. A fourth shorter bar lies beyond and two dusky spots between this and the caudal base which has a black spot on it. A broad blackish brown bar descends from the eye to the under side of the head and there is a dusky brown elongate spot lying above the pectoral base. On the upper half of the body there is a circular black spot on most of if not all the scales. On the sides of the head and lower half of the body are numerous pearly white or bluish white spots. The dorsal is vaguely spotted with brown. The anal has one or two rows of circular black spots. The pectoral base is white spotted, the fin colorless. The ventral is bluish white with a dusky margin.

Described from the type, 24 mm. long, and eleven paratypes, ranging down to 13 mm. in length, collected at Bushman Bay, Malekula Island, in the New Hebrides.

This little fish is close to *Gnatholepis davaoensis* Seale, but is sufficiently distinct.

I take pleasure in naming it for my esteemed friend, Mr. Ewan Corlette, of Bushman Bay, New Hebrides, whose interest in and knowledge of the botany, zoology, and anthropology of the New Hebrides is most extensive.



**Glossogobius koragensis** sp. nov.

*Type* from Koragu, Sepik River, New Guinea. No. 17365 Field Museum of Natural History. Length 142 mm. May 23, 1929.

Dorsal VI-I, 9; anal I, 8; there are 36 scales in a longitudinal series, plus 3 or 4 small scales on the caudal base, 11 in transverse series, and 30 predorsal scales.

The low, elongate body is compressed posteriorly, the head very long and depressed anteriorly. The depth is 5 to 5.9, the head 2.85 to 2.9, the long, round-pointed caudal 3.7 to 3.8, the pectoral 5 to 5.25 times in the length. The eye is 6.5 to 6.85, the snout 3 to 3.13, the interorbital 4.8 to 4.9, the least depth of the caudal peduncle 3.2 to 3.25 times in the head.

The large, oblique mouth extends beneath the front margin of the eye or a little beyond, the lower jaw projecting strongly. The head is entirely naked, or there may be a few small scales on the upper part of the opercle. The preopercle has five longitudinal lines of microscopic dots or papillae. The vertical fins are all low, the first dorsal not reaching the second when depressed and the second dorsal and anal falling far short of reaching the caudal base. The third spine of the first dorsal is longest, 2.8 times in the head. The third ray of the second dorsal is longest, 2.4 times in the head. The third anal ray is longest, 2.5 times in the head. The ventral extends a little more than halfway from its origin to the anal origin, 1.9 times in the head.

The color in alcohol is brown to yellowish brown, the dorsal surface a little darker to dusky. The caudal is transversely barred by dusky spots. The soft dorsal is similarly marked, the spinous dorsal more or less dusky. The pectoral is dusky to clear, the other fins yellow or colorless.

Described from the type, 142 mm. long, and a paratype, 112 mm. long, collected at Koragu, Sepik River, New Guinea. I also place here two specimens, 106 and 140 mm. long, from Ambot, Kerame River, New Guinea.

**Vaimosa balteata** sp. nov.

*Type* from Majalibit Inlet, Waigiu Island. No. 17386 Field Museum of Natural History. Length 19.5 mm. June 7, 1929.

Dorsal VI-I, 7; anal I, 6; there are 26 scales in a longitudinal, 9 in a transverse series, and 10 before the first dorsal.

The body is rather plump and heavy anteriorly, the depth 3.85 times, the head 3.16 times in the length. The eye is rather large

and prominent, extending above the head profile, 3 times in the head. The snout is short, steeply curved, 4.7 times in the head. The interorbital space is very narrow, the eyes nearly touching. The lower jaw is slightly included, the angle of the maxillary extending beneath the pupil. The spinous dorsal is moderate, the second spine elongate, with thread-like tip, nearly as long as the head. The second dorsal is 1.4 times in the head, the anal a very little lower. The ventrals extend to the anus, their length 0.9 of the head. The pectoral is almost equal to the head. The depth of the caudal peduncle is 2.25 times in the head. The caudal tip is broken, the fin about 1.3 times in the head. There are 17 scales on the opercle. Scales on the nape, pectoral base, and breast are much smaller than elsewhere on the body.

The color in alcohol is gray, clouded with brown spots and fine dots. A black band extends from the dorsal downward and slightly backward to the belly, but does not quite meet with its fellow. A black bar extends from the middle of the eye backward and downward to the lower end of the pectoral base. There are three or four oblong brown spots in a median series behind the black cross-band, and on the caudal base a darker spot with a clear center. The first dorsal is black, the other fins pale to dusky.

Here described from the type, a male 19.5 mm. long, collected in a creek flowing into Majalibit Inlet, Waigiu Island. A male paratype, 20 mm. in length, was also secured, but it is in very poor condition, the top of the head having been torn open.

**Vaimosa osgoodi** sp. nov.

*Type* from river flowing into Suva Harbor, Viti Levu Island, Fiji Islands. No. 17387 Field Museum of Natural History. Length 14 mm. March 13, 1929.

Dorsal VI-I, 7; anal I, 5; there are 26 scales in a lateral, 9 in a transverse series; predorsal scales 6.

The depth of the short, rather thickset body is 3.1 to 3.2 times in the length, the head 2.8 to 3 times. The breadth of the head is 0.9 of its depth. The back is convex, the ventral profile nearly horizontal. The eye is high up, dorso-lateral, projecting above the profile, 2.5 to 2.6 times in the head. The short, steep snout is only half an eye's diameter in length. The large, oblique mouth is terminal, the lips even. In males the gape extends beyond the eye, the posterior angle of the maxillary reaching nearly to the posterior angle of the preopercle. In the female the mouth is much smaller

and the posterior angle of the maxillary lies beneath the middle of the pupil. There are 7 scales on the opercle. The first spine of the first dorsal is longest, greatly elongated and thread-like in males, reaching to the posterior angle of the second dorsal when depressed and 2.15 times in the length. The next to the last ray of the second dorsal is longest, 3.1 times in the length. The first anal ray is longest, equal to the second dorsal. The depth of the caudal peduncle is 2.15 times in the head and very little less than its own length. The broadly rounded caudal is 2.5 times in the length. The middle and lower rays of the pectoral are much more elongated than the upper ones, equal to the head. The ventrals extend to the anal in the male, 4.2 times in the length, but are much shorter in the female, barely reaching the anus and not nearly reaching the anal fin.

The color in alcohol of the male specimen is brownish gray, with a row of four blackish spots along the middle of the side, two circular black spots on the caudal base, a black spot at the base of the first dorsal and two below the second dorsal, six black spots along the ventral side, a brownish black transverse bar from the spot below the first dorsal to the abdomen, a small black spot at the upper angle of the gill opening and two small dusky spots on the pectoral base. The scales are nearly all outlined by dusky lines and dots. Two broad dusky bands extend downward from the eye and one crosses the preopercle in a broad curve, its origin at the upper end of the opercle, its lower end behind the posterior end of the maxillary. The first dorsal has a large black spot on its basal posterior portion and another one above this. There are three transverse rows of black spots on the second dorsal and four on the caudal. The anal and ventrals are dusky, the pectoral colorless. The female is essentially like the male in coloration, but the first dorsal lacks the basal black spot and the second dorsal apparently lacks the rows of small spots but instead has a large basal black blotch. The fin is so badly mutilated that the markings are uncertain.

Here described from the type, a male 14 mm. in length, and the allotype, a female 16 mm. long. They were obtained from a small river flowing into Suva Harbor, Viti Levu Island, Fiji group. Thirty-three specimens in good condition were collected at Waigiui Island, their lengths from 10 to 16 mm.

Named for Dr. Wilfred H. Osgood, Curator of Zoology at Field Museum of Natural History, in recognition of his interest in the expedition.



**Callogobius ocellatus** sp. nov.

*Type* from Ovalau Island, Fiji Islands. No. 17363 Field Museum of Natural History. Length 37 mm. March 17, 1929.

Dorsal VI–I, 10; anal I, 9; scales in longitudinal series from angle of operculum, about 63; in transverse series from origin of second dorsal, 20 or 22; about 24 predorsal scales.

The depth of the much compressed body is 3.9 times in its length. The head is large, its breadth equal to its depth, its length 3 times in the total. The eyes are very high up, latero-dorsal, prominent, very close together, their margins touching, equal to the short, blunt snout, four in the head. The dorsal profile is convex, highest at the origin of the dorsal, the broad blunt snout very steeply inclined. The mouth is nearly horizontal, the maxillary extending to beneath the posterior margin of the eye. Teeth in three rows in each jaw, a pair of small canines anteriorly in the upper jaw. The second dorsal spine is longest, 5.7 times in the total length or about 1.85 times in the head, reaching the origin of the second dorsal, which is higher, the longest rays 1.6 times in the head, the last ray much shorter than those preceding it. The anal is approximately equal to the second dorsal in height. The depth of the caudal peduncle equals its length, 2.7 in the head. The caudal and pectoral are equal, 1.2 in the head, the long, pointed ventrals 1.67 times in the head, extending to the origin of the anal.

The scales posterior to the pectoral are ctenoid, those on the last half of the trunk larger than those forward, which are cycloid and become very small before the dorsal and on the pectoral base and breast. The head is naked, a few scales above the opercles along median dorsal region. Cheeks and snout with rows of minute papillae.

The color in alcohol is brown, with four white cross-bands, the first at the origin of the first dorsal, the next at the origin of the second dorsal, the third at the posterior part of the second dorsal, and the last on the caudal peduncle; between these along the middle of the side lie four large dark brown white-margined ocelli. The lower part and under side of the head are alternately cross-banded with brown and white bands; the abdomen is brown, crossed by white lines; the pectoral base and fin are spotted and barred with brown and white, both dorsals barred with rows of brown spots, the anal dusky with two large white spots, the ventrals dusky with white spots, the caudal grayish.

Here described from the type and only specimen, 37 mm. long, collected at Ovalau Island, Fiji Archipelago.



**Ctenogobius aterrimus** sp. nov.

*Type* from Kulambangra Island, Solomon Islands. No. 17384 Field Museum of Natural History. Length 28 mm. April 23, 1929.

Dorsal VI-I, 8; anal I, 7; there are 28 scales in a longitudinal series and 12 in a transverse series.

The depth is 3.5, the head 3.2, the caudal 3.1, the pectoral 3.3 times in the length. The eye is 3.5, the snout 4.4, the least depth of the caudal peduncle 2.2 times in the head.

The anterior upper profile is convex, the snout very steep, the eye projecting above the profile, the mouth oblique with slightly projecting chin, the maxillary extending to a vertical from the front margin of the eye. The head is entirely naked, with a prominent pore behind the eye and a row of pores along the supraopercular groove. On the cheeks are two longitudinal and several vertical or crisscross lines of minute papillae. The eyes are very close together, their inner margins nearly touching. The second dorsal spine is longest, with filiform tip. The dorsal rays and anal rays do not reach the caudal when depressed, the posterior anal ray is longest.

The color in alcohol is black over the entire body and fins except the caudal, which is cross-barred by rows of paler spots.

A single specimen, 28 mm. long, was taken from a fresh-water stream on Kulambangra Island, in the Solomon group.

**Ctenogobius malekulae** sp. nov.

*Type* from Bushman Bay, Malekula Island, New Hebrides. No. 17385 Field Museum of Natural History. Length 23 mm. April 4, 1929.

Dorsal VI-I, 9; anal I, 8; there are 36 scales in a longitudinal series, plus one more on the caudal base and about 14 in a transverse series from the origin of the second dorsal to the anal origin.

The body is elongated, little elevated, the posterior part laterally compressed, the head flattened. The depth is 6.65 to 6.85 times, the head 3.4 to 3.5 times in the length. The breadth of the head is 1.5 times in its own length. The round-pointed caudal equals or is a little shorter than the head. The eyes are small and rather far apart, on top of the head, about 6.5 times in the length of the head. The flat interorbital is a fourth more than the eye, 5.2 to 5.4 times in the head. The wide, blunt snout is 3.6 to 3.75 times in the head, the least depth of the caudal peduncle 2.6 to 2.95 times. The pointed pectoral is 4.6, the slender pointed ventral 5 times in the length.

The body is covered with cycloid scales, largest posteriorly, the head and nape naked back to the first dorsal, as are also the breast and pectoral base. The scales are minutely crenulate posteriorly when seen under a compound microscope, but there is no trace of a ctenoid margin. The oblique mouth is large, the lower jaw projecting, the maxillary extending back beneath the eye. The teeth are in 4 rows, the outer row enlarged and widely spaced, the innermost row close set. The tongue is rounded at the tip. The posterior nostril is in a tube before the middle of the eye. Behind each eye is a large pore with a conspicuous raised margin and behind the interorbital space are two similar pores set close together. The margins of the suborbital, subopercle, preopercle, and opercle and under side of the head are more or less tuberculate-papillate.

The color in alcohol is pale yellowish with a broad brown stripe along the side, ending in a large, deep brown spot on the caudal base; the top of the head and cheeks is darkened by minute brown specks.

At Bushman Bay, Malekula Island, New Hebrides, the type and paratype of this peculiar goby were obtained, each being 23 mm. in length.

**Ctenogobius waigiensis** sp. nov.

*Type* from Waigiu Island. No. 17413 Field Museum of Natural History. Length 39 mm. June 7, 1929.

Dorsal VI-I, 9; anal I, 8. There are 30 to 32 scales in a longitudinal, 11 in a transverse series, and 11 to 13 predorsal scales.

In the type specimen, 39 mm. long, the depth is 5.5, the head 3.5 times, the caudal 3.9 times in the length. The eye equals the snout, 3.66 times in the head. The narrow interorbital space is 3 times in the eye. The least depth of the caudal peduncle is 3.8 times in the head. The vertical fins are low, the first dorsal 2.3, the second dorsal 2.2, and the anal 3.66 times in the head. The pectoral is 1.25, the ventral 1.8 times in the naked head.

The body is plump anteriorly and laterally compressed posteriorly. The width of the broad head is three-fourths of its own length. The anterior profile is steeply descending, the lower jaw slightly projecting. The scales in advance of a vertical from the dorsal origin are much smaller than elsewhere. The teeth are arranged in 8 rows in each jaw, with an outer row of much larger and widely spaced teeth anteriorly, followed by a band of fine teeth and an inner row of slightly larger teeth. A posterior canine is present at the hind end of the outer row of teeth in the lower jaw. The tip of

the narrow tongue is rounded. There are two longitudinal, and at least four transverse rows of papillae on the cheeks and one vertical and three horizontal rows on the opercle.

The color in alcohol is uniform brown, with a small blackish spot above the opercle and a large dusky blotch on the basal portion of the pectoral. The dorsals are pale brown, barred by five rows of dark brown spots. The anal is dusky brown, the other fins are all grayish brown.

A paratype of the same length varies slightly in proportions. The head is 3.3 times in the length. The eye is 3.75 times in the head. The second and third dorsal spines are greatly elongated, reaching the middle of the second dorsal when depressed, a trifle more than 3 times in the length. The second dorsal is elongated posteriorly, extending on the caudal when depressed, 1.5 times in the head. The anal increases in height posteriorly, its longest ray twice in the head. The anal, caudal, pectoral, and ventrals are all dusky, the color otherwise as already given.

In smaller specimens there is often a series of seven or eight large pale spots along the lower part of the side and sometimes there are two pale bars on the cheeks. The dorsal and caudal are usually paler and conspicuously cross-barred with dark brown spots.

A total of 150 specimens, 9 to 39 mm. in length, was taken near the mouth of a small fresh-water stream flowing into Majalibit Inlet, Waigiu Island.

***Aparrius aurocingulus* sp. nov.**

*Type* from Ovalau Island, Fiji Islands. No. 17353 Field Museum of Natural History. Length 45 mm. March 20, 1929.

Dorsal VI–I, 11; anal I, 11; about 56 scales in a lateral, 18 or 20 in a transverse series.

The body is laterally compressed, the depth 5 to 5.5 times, the head 3.25 to 3.45 times in the length. The dorsal profile of the body is but little elevated, the short steep snout descending to the prominent chin. The eyes are high up, prominent, 3.5 to nearly 4 times in the head, close together, the interorbital space about one-fourth of an eye diameter. The angle of the moderately large, oblique mouth extends to a point beneath the pupil. The teeth are in 3 or 4 rows in each jaw, the outer and inner rows enlarged, with a lateral canine on each side of the mandible. The tongue is markedly notched. The head, nape, pectoral base, and breast are entirely naked. The



scales on the posterior half of the body are larger than those on the anterior half.

The first dorsal is high, the second spine sometimes elongate and filiform, 3.8 to 4 times in the length. The second dorsal equals or nearly equals the first dorsal, its posterior half highest. The anal is similar but from a tenth to a fourth lower, the posterior rays of both second dorsal and anal extending upon the caudal when depressed. The long, pointed pectoral slightly exceeds the length of the head. The pointed ventrals are 1.3 to 1.4 times in the head. The depth of the caudal peduncle is about 1.5 times in its own length. The caudal is about 2.5 times in the length, its central rays much elongate and readily broken.

The color in alcohol is whitish, palest below, with light brown blotches and spots over the upper part and a row of 5 larger spots down the middle of the side; on the lower half of the body are 9 white transverse lines, the first behind the pectoral base, the last two above the anterior part of the anal; on the sides of the head are 2 rows of dark brown spots and 3 diagonal rows of short golden bars or spots, extending downward and forward from the nape. The first and second dorsals are both yellowish gray with a longitudinal yellowish white bar with violet edges a little below the middle. One specimen has the entire bar very deep violet, almost black. The anal is whitish with a broad violaceous brown margin. The pectorals are colorless, with a yellow spot at the upper angle and a large yellow spot on the lower basal part. The caudal is yellowish with traces of dusky on the upper and lower margins. The ventrals are deep violet along their inner half. In life the perpendicular lines on the body and the lines and spots on the head were all golden, making this one of the handsomest of gobies. Unfortunately I was not able to take additional color notes from the still living specimens.

Described from four specimens, 36 to 45 mm. in length, obtained from a pool on a reef west of Ovalau Island, Fiji Archipelago.

**Amblygobius myersi** sp. nov.

*Type* from Hathorn Sound, New Georgia, Solomon Islands. No. 17352 Field Museum of Natural History. Length 57 mm. April 22, 1929.

Dorsal VI, 15; anal I, 13; there are 58–60 scales in a longitudinal, 20 in a transverse series from the origin of the second dorsal to the anal origin, and about 30 predorsal scales.



The form is elongate, with bluntly rounded head, the depth 5.4 times, the width 6 times, the head 3.8 times, the rounded caudal 3.56 times, in the length. The dorso-lateral eyes equal the broadly rounded snout, 3.7 times, the interorbital 4.4, the least depth of the caudal peduncle 1.8 times in the head. The pectoral equals the head.

The mouth is oblique, terminal, the jaws even, the maxillary extending beneath the front margin of the pupil. The teeth in the outer row of the upper jaw are few, widely spaced, large, curved, and fixed, those of the inner row small. The lower jaw has an outer row of large teeth terminating on each side in a very large canine, the inner row of stout curved teeth larger than those of the inner row above. The body is covered with ctenoid scales, those on the nape and breast much smaller than the rest; the predorsal scales extend to the eyes; there is a small patch of scales on the upper part of the opercle, the head is otherwise naked.

The dorsal spines are elongate with filiform tips, the fifth spine 1.35 times in the head; the second dorsal and anal are elevated, the last or next to the last ray longest, equal to the spinous dorsal and reaching the caudal when depressed. The ventral is short, not nearly reaching the anal, 1.55 times in the head.

The color in alcohol is whitish yellow, the snout violaceous gray. A white line runs from the dorsal origin to the inner margin of each eye. Another white line runs from the eye back to the top of the caudal peduncle, with 2 or 3 short bars across the nape near the eye. A dark-margined white band runs around the snout from the middle of the front margin of the eye, along the lower margin of the eye to the middle of the rear margin, then back to the upper part of the caudal base. A similar band on the chin connects the angles of the mouth, and runs back from the mouth to the pectoral base where it forms a loop, then continues underneath from the pectoral axil to the lower part of the caudal base. The fins are all whitish to nearly colorless, but the dorsals show traces of longitudinal pearly or violaceous bands. The longitudinal stripes on the head and body were evidently pearly or opalescent blue in life.

The type and only specimen of this beautiful little goby was collected at Hathorn Sound, New Georgia Island, New Hebrides. Its length is 57 mm.

Named for Dr. George S. Myers of the United States National Museum, an enthusiastic student of fishes who has been very helpful many times.

**Cryptocentrus geniornatus** sp. nov.

*Type* from Waigiu Island. No. 17364 Field Museum of Natural History. Length 41 mm. June 6, 1929.

Dorsal VI-I, 10; anal I, 11; about 80 scales in a longitudinal series and 8 more on the caudal base.

The depth of the slender, elongate body is 5.4 to 5.5 times, the long head 3.5 to 3.7 times in the length. The eyes are dorso-lateral, projecting above the profile, their inner margins nearly touching, 3.75 to 3.9 times in the head. The dorsal profile is convex, the steeply curved snout equal to the eye. The mouth is large, oblique, the maxillary extending beneath the pupil. The teeth are typical for the genus.

The dorsals are close together, the third and fourth dorsal spines much elongated and thread-like, equal to or longer than the head. The second dorsal and anal are high, 1.2 or 1.3 in the head, the posterior rays extending upon the caudal when depressed. The depth of the caudal peduncle is 2.6 to 3 times in the head. The long, pointed caudal is a little longer than the head, 3.1 times in the length. The pectoral is narrow, 1.2 in the head. The pointed ventrals reach to the anal and approximately equal the head. Posteriorly the scales are regularly disposed, but anteriorly they become very small and irregular and more or less imbedded. Under the microscope all except the anterior scales are seen to be ctenoid.

The color in alcohol is pale brown with seven broad dark brown cross-bands which slant forward as they pass from the back to the lower side of the body. The side of the head is clear olive brown, sprinkled with small, circular, pearly white spots, which extend upon the pectoral base. Behind the eyes and on the nape are spots and short bars of pearly white. On the membrane of the first dorsal and anterior half of the second dorsal are rows of large ocellated pearl white, violet-margined spots which form about 3 cross-bars. The anal is pale basally, becoming dusky marginally. The pale caudal has a blackish base and a blackish lower margin. The pectoral is pale, the ventrals plumbeous.

Here described from the type, 41 mm. long, and one paratype, 36 mm. long, collected at Waigiu Island.

**Atuona** gen. nov.

*Type*, *Atuona tricuspidata* sp. nov.

The teeth are in broad pavement-like bands in both jaws, all tricuspid. The outer row is enlarged and depressible in the upper

jaw. There are one or two pairs of canines in the lower jaw behind the band of teeth.

The body is smooth, naked, elongate, and laterally compressed, with rounded blunt head. The vertical fins are low, the dorsals separated, the caudal shorter than the head. The pectoral is nearly as long as the head, without free silky rays. The ventrals are united, slender, short. Dorsal VI-I, 11; anal I, 8; branchiostegals 5.

This genus is close to *Itbaya* Herre, but is unique among gobies in its dentition, which must be appalling to its prey. These fish are tiny inhabitants of tide pools, obtained only by using poison.

*Atuona*, the name of the village on the island of Hiva Oa, one of the Marquesas group, where the species was collected.

***Atuona tricuspidata* sp. nov.**

*Type* from Atuona, Hiva Oa Island, Marquesas Islands. No. 17356 Field Museum of Natural History. Length 21.5 mm. February 5, 1929.

Dorsal VI-1, 11; anal I, 8; the depth 5.5 times and the head 4.1 times in the length.

The smooth, naked, elongate body is laterally compressed, the back very slightly elevated, the head broader than the trunk, the snout very bluntly rounded. The circular eye is high up, lateral, approximately equal to the snout, 5 times in the head. The inter-orbital is equal to the eye. The mouth is oblique, low, the maxillary extending to beneath the eye, but varying in different individuals from below the front margin of the eye to beneath the middle of the pupil. Both jaws are paved with very broad solid bands of strong tricuspid teeth. The outer row in the upper jaw is enlarged and depressible, followed by eight rows of smaller teeth, narrowing to three or four posteriorly. The lower jaw has six rows of teeth which narrow down to two far back on the jaw. There are one or two pairs of strong hooked canines behind the last row of teeth in males. A pair of very small canines is present in females.

The dorsals are well separated, the tips of the spines sometimes slightly elongated and thread-like, the third spine about 1.7 times in the head. The posterior two-thirds of the second dorsal is higher than the first, the longer rays 1.5 to 1.6 times in the head. The broad pectoral is a little shorter than the head. The ventrals are short, about 1.67 times in the pectoral, their origin posterior to that of the pectoral, and extending less than halfway to the anus. The depth of the caudal peduncle is a little more than 1.5 times its length,



and 2.26 times in the head. The broad, rounded caudal is 1.3 times in the head.

In life the color is deep dull green with eight broad blackish brown cross-bands, sometimes meeting below, narrower than or equal to the interspaces, the first one above the pectoral base, the last one on the caudal base. The top and sides of the head are black, spotted with green. The first dorsal is black, with a row of pale green spots. The second dorsal and caudal are black with two or three transverse rows of pale green spots. The anal and ventrals are dusky or black, the pectorals colorless. In alcohol the green becomes white or nearly so; the sides and top of the head are handsomely spotted or dappled with white or pale marks; a white spot is before the dorsal; otherwise as in life.

Here described from the type and thirteen paratypes, varying from 12 to 21.5 mm. in length, collected at Atuona, Hiva Oa Island, Marquesas.

A handsome little fish with extraordinary dentition.

**Papenua gen. nov.**

Type, *Papenua pugnans* (Grant).

This genus is distinguished from related genera, such as *Sicyopterus* and *Sicydium*, by the presence of bilobed teeth in the upper jaw and large canines in the front of the lower jaw.

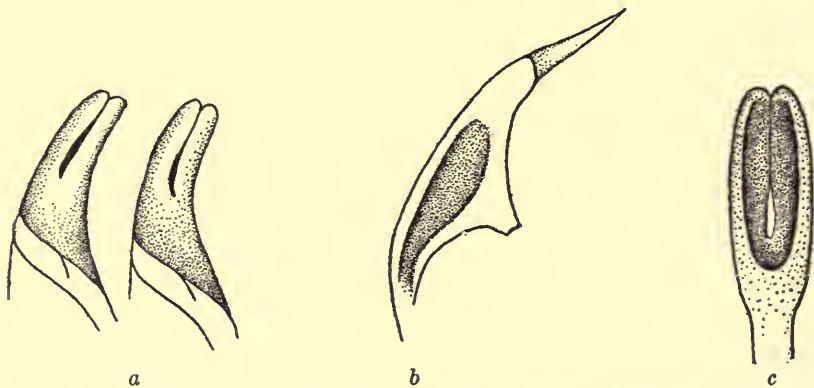


FIG. 33. Teeth of *Papenua pugnans* (Grant). *a*, seen from above; *b*, lateral view; *c*, front view. Greatly enlarged.

The upper lip is marginally crenate, its inner surface smooth, without papillae or tubercles. Both upper and lower lips are thick. The teeth of the upper jaw are minute, movable, bilobate. On the



lower lip is a row of tiny simple teeth. There is a pair of canines at the symphysis, with a row of smaller ones behind on each side.

The body is subcylindrical, the ventrals short, adnate, and broader than long. There are about 60 small ctenoid scales in a longitudinal series.

Type and only species known, *Papenua pugnans* (Grant), found in Samoa and the Society Islands.

*Papenua*, from Papenoo, the largest river in Tahiti, where this little fish occurs among the stones and gravel.

#### Family CALLIONYMIDAE

##### *Callionymus wilburi* sp. nov.

*Type* from Waigiu Island. No. 17491 Field Museum of Natural History. Length 20 mm. June 8, 1929.

Dorsal III-8; anal 7 or 8; caudal 10.

The depth is 6.9 to 7 times, the head 3 to 3.1 times in the length. The caudal equals the head. The width of the head is 1.25 to 1.3 times in its own length. The eye equals the pointed snout, 3 to 3.25 times in the head. The interorbital is a narrow ridge, much less than the pupil in breadth. The preopercular spine is 3.2 to 3.25 times in the head. The first dorsal is low, 2.33 times in the head, or the first dorsal spine may be much elongated, thread-like, and then longer than the head. The least depth of the caudal peduncle is 4.66 times in the head. The pectoral is 3.5 to 3.9 times, the ventral 3 to 3.33 times in the length.

The wedge-shaped trunk is much flattened, the long tail subcylindrical. The mouth is small, the maxillary falling far short of the eye. The preopercular spine has a sharp terminal tooth, two large hooked teeth on its inner margin, and an antrorse hook on its outer margin near its base. The small pointed snout is protractile and often much extended, but my measurements are made with it retracted.

The color in alcohol is whitish or gray, covered above with an intricate pattern of fine brown dots arranged in cross-bars and bands, the ground color showing in pearly areoles and spots which form a complicated and artistic pattern of rounded spots and festoons. The posterior rays of the first dorsal are black or blackish. The anal is colorless, or with a dark margin. The other fins are all more or less cross-banded with brown or blackish spots.

Four specimens, 16 to 22 mm. in length, were taken on a reef on the south coast of Waigiu Island, near Majalibit Inlet.

## Family GOBIESOCIDAE

**Gobiesox paradiseus** sp. nov.

*Type* from Eden Island, Galapagos group. No. 17404 Field Museum of Natural History. Length 41.5 mm. January 13, 1929.

Dorsal 7; anal 6.

The very large, depressed, anteriorly rounded head is broader than long, its length about 2.5 to 2.75, its breadth 2.4 to 2.6 times in the total length. The large latero-dorsal eyes are 3.25 to 3.4 times in the head, 1.25 times in the snout. The interorbital is narrower than the eye, 3.85 to 4.3 times in the head. The teeth in both jaws are in one row, the anterior ones in the upper jaw larger than the lateral ones. The incisors in the lower jaw are entire, comparatively broad, followed on each side by three narrower taller teeth, the last one much the highest, after which are six small teeth. The ventral disk is a little shorter than the head, 2.6 to nearly three times in length. The broad short pectoral is 2 to 2.25 times in the head, with a vertical fold of skin along the lower half of the base. The dorsal is inserted very far back, behind the vent, the distance from the origin of the dorsal to the end of the vertebral column 4 or a trifle more than 4 times in the total length. The caudal is truncate or with irregular margin, 3.75 to 4 times in the length.

The color is cherry red, more or less transversely barred with paler red or olivaceous on the posterior half. There is a large spot of very dark red between the eye and the pectoral and a similar spot midway between the eyes. These are red like the rest of the anterior part of the head. The pupils are conspicuously white. The dorsal is deep red. The anal is pale red or nearly colorless. The caudal is barred with pink and red. The under parts are yellowish. In alcohol, specimens become paler, and more or less olivaceous, especially on the posterior half.

Here described from three specimens, 28 to 41.5 mm. in length, the type and paratype from Eden Island and one paratype from South Seymour Island, Galapagos group.

*Paradiseus*, the Garden of Eden.

## Family BLENNIIDAE

**Enneapterygius punctulatus** sp. nov.

*Type* from Wala Island, New Hebrides. No. 17388 Field Museum of Natural History. Length 21 mm. March 29, 1929.

Dorsal III-X or XI-VII, anal I, XIV or XV. There are 32 scales in a longitudinal series plus two more on the caudal base. There are 13 to 15 tubulated scales in the upper section of the lateral line, 3 above and 6 below it. Beginning one scale beyond the upper section, there are 18 scales with pores along the middle of the side.

The depth is 5.25, the head 3.7, the pectoral 3.5 to 3.6, the caudal 4.2 times in the length. The eye is 2.85, the snout 2.85 to 3, the least depth of the caudal peduncle 3.5 times in the head.

The head resembles that of a *Trigla*, broad, with convex anterior profile and small pointed snout, the posterior half of the trunk compressed. The eyes are large, prominent, and very close together. The dorsal is in three divisions, the first very low, the height of the second about 1.9 times in the head, and that of the third about 2.8 times in the head, only the last ray divided. The anal is low, all the rays simple but the last. The pectoral is large, extending nearly to the posterior end of the second dorsal when depressed. The caudal is rounded.

The ground color of alcoholic specimens is whitish, largely concealed by black dots. There is a vertical line or bar of several black dots on each scale of the trunk, and similar dots are thickly strewn over the cheeks and the under side of the head, the breast, and the greater part of the pectoral. The top of the head and trunk back to the second dorsal is comparatively pale. On the trunk are 2 or 3 obscure white bands, extending upward upon the dorsal. The first dorsal is dotted with black specks. The second dorsal has a basal and a marginal black band, the interspace white or colorless. The third dorsal has a basal black band, the rays are black-dotted, the membranes clear. The anal is black, the caudal black with whitish tip. The upper third of the pectoral is whitish or yellowish, with black specks thinly sprinkled over it, the remainder black or dusky with many darker dots. The ventrals are black or dusky with pale tips. The iris is reddish bronze to reddish golden.

Here described from the type and five paratypes, 20 to 21 mm. long, collected at Wala Island. Three specimens, 19 to 21 mm. in length, were taken at Hog Harbor, Espiritu Santo Island, and one, 21 mm. long, at Malo Island, all in the New Hebrides.

This species is near to *Enneapterygius hemimelas* Kner and Steindachner, but differs too much in several characteristics, for example, in fin rays and proportions, to be placed with it.

**Enneapterygius waigiensis** sp. nov.

*Type* from Waigiu Island. No. 17494 Field Museum of Natural History. Length 17 mm. June 8, 1929.

Dorsal III-X or IX-VIII; anal I, XIII.

There are 28 scales in a longitudinal series plus 2 more on the tail, and 7 or 8 in a transverse series. The lateral line extends back only a short distance and consists of 8 tubes.

The depth is 4.5 to 4.85, the head 3.25 to 3.5, the caudal 3.9 to 5 times in the length. The maxillary equals the eye, which is 2.65 times in the head. The pointed snout is 3 to 3.2 times in the head. The interorbital is 2.5 times in the eye. The elongate pectoral is 3.2 times in the length. The ventral is 1.3 to 1.7 times, the caudal 1.16 to 1.6 times in the head. There is a small, simple tentacle on the upper margin of the eye.

The color in alcohol is whitish, with seven or eight conspicuous blackish brown spots beneath the anal, and a row of large brown spots along the middle of the side. Most of the scales are margined by a band of minute brown dots, with similar dots thickly sprinkled over the breast and sides of the head. The first and second dorsal are blackish, the remaining fins all cross-barred by rows of blackish brown spots.

Here described from the type, 17 mm. long, and a paratype, 19 mm. long, collected on a reef on the south coast of Waigiu Island, near the mouth of Majalibit Inlet.

**Tagusa** gen. nov.

*Type*, *Tagusa delicata* sp. nov.

Body slender, covered with medium-sized ctenoid scales, except on breast and belly before anal, the sides of the head and the pectoral base naked. The long dorsal is continuous, the posterior spines shortest, the vertical fins ending at the caudal peduncle and not attached to the slightly forked caudal. The incomplete lateral line is high up and prominent. There are no tentacles. The gill membranes are free from the isthmus. The jaws are subequal. The teeth are minute, uniform, simple, in bands. The length of the pectoral is a trifle less than the head, the lower rays simple. The ventrals are I, 2, shorter than the other fins. The caudal is slightly emarginate, scarcely equal to the head. The dorsal rays are 33 to 38. The anal rays are 23.

Separated from related genera by the continuous dorsal.

Tiny rock pool dwellers.



*Tagusa* from Tagus Cove, Albemarle Island, Galapagos, the type locality.

***Tagusa delicata* sp. nov.**

*Type* from Tagus Cove, Albemarle Island, Galapagos Islands. No. 17399 Field Museum of Natural History. Length 18.5 mm. January 9, 1929.

Dorsal XXII to XXIV, 11 to 14; anal II, 21.

The scales are 2-38-7, lateral line with 25 to 28 tubules. The head and body are laterally compressed; the head 3.5 to 4 times in the length; the depth 4.5 to 5 times in the length, much more than the breadth. The eye is 3 to 3.7 times in the head. The snout is convex, less than the eye, 4.3 to 4.4 times in the head. The inter-orbital is about equal to the snout. The mouth is small, terminal, the jaws equal or the chin slightly projecting, the maxillary extending beneath the anterior margin of the eye or to the pupil. The vertical fins are low, longest dorsal spines and rays and anal rays about equal. The pectoral varies from 0.85 of the head to almost equal its length. The caudal is equal to or less than the pectoral. The ventral is about two-thirds of the head.

Color in alcohol pale yellowish, with traces of about six saddle-like dark brown or blackish spots across the trunk or on the dorsal half only; fins colorless.

Here described from ten specimens 16.5 to 18.5 mm. in length, collected at Tagus Cove, Albemarle Island, Galapagos.

***Spinoblennius* gen. nov.**

*Type*, *Spinoblennius spiniger* sp. nov.

Tiny naked fishes near *Hypsoblennius*, but distinguished by having the top of the head covered with a bony plate, a prominent spine at the lower angle of the preopercle, and the absence of tentacles above eyes, nostrils, or on nape.

Dorsal XII, XI; anal II, 15 or 16; lateral line incomplete; no canine teeth; isthmus broad, the gill openings restricted to the sides; ventrals I-3; caudal slightly rounded.

***Spinoblennius spiniger* sp. nov.**

*Type* from Eden Island, Galapagos. No. 17395 Field Museum of Natural History. Length 15 mm. January 13, 1929.

Body robust anteriorly, the head about 3.5 times, the depth about 3.6 in the length, the eye about 2.4 times in the head, equal

to or slightly more than the interorbital width. The head large, blunt, nearly as broad as long, the short snout bluntly rounded and slightly protuberant, twice in the eye. The mouth small, inferior, the maxillary extending beneath the margin of the eye or back to the pupil. The teeth subequal with no trace of canines. The lateral line short, slightly curved, not extending to the end of the pectoral, with 5 to 8 tubules. The dorsal fin continuous, the anterior spines highest, the posterior ones low, the longest rays about equal to the highest spines. Dorsal and anal not extending on caudal peduncle. The caudal slightly rounded, 4.16 times in the length. The ventrals 1.33 in the head. The pectorals broad, slightly exceeding the head.

Color in alcohol pale yellowish, with six blackish bars over back and on upper half of sides; head dusky with many dark specks; under side of pectoral black, except upper third which is white; other fins colorless.

Here described from the type, 15 mm. long, and seven paratypes, from 14.5 to 15 mm. long, collected from a tide pool at Eden Island, Galapagos.

***Petroscirtes kulambangrae* sp. nov.**

*Type* from Kulambangra Island, Solomon Islands. No. 17392 Field Museum of Natural History. Length 36 mm. April 23, 1929.

Dorsal XXX; anal XVIII.

The depth is 4.35 to 4.5, the head 4.1 to 4.2, the caudal 4.5 to 4.7, the pectoral 6.55 to 6.6 times in the length. The eye is 3.2 to 3.4, the snout 3.3 to 3.45, the interorbital 4 to 4.3, the least depth of the caudal peduncle 2.15 to 2.3 times in the head.

The body is slender, elongate, compressed, with prominent eyes which are flush with the upper profile. The convex snout is nearly vertical. On the sides of the head are rows of prominent but small pores. The caudal is rounded.

In life the color is blue with three black lines, one at the dorsal base, one from the tip of the snout across the eye to the caudal, and the third from the pectoral base to the caudal. In alcohol there is a black band from the top of the head along the dorsal base and including the greater part of the dorsal anteriorly but narrower posteriorly and only covering the lower third of the dorsal, ending at the dorsal axil. Below this is a pale brownish band from the eye to the upper end of the caudal base, then a black band from the tip of the snout across the eye to the caudal, extending halfway across the fin. On this band are numerous vertical black bars as in *Petroscirtes tapeino-*

*soma*. Below this is a gleaming bluish white band from the mouth, curving upward across the head then back to the middle of the caudal. Below this is a third black band, extending from the base of the pectoral to the lower end of the caudal base and upon the anterior half of the caudal, with numerous vertical black bars upon it. The dorsal and anal are both margined by a brownish black line. The pectorals and caudal are clear.

Described from the type, 36 mm. long, and a paratype, 33 mm. long, collected from a fresh-water creek, Kulambangra Island, Solomon Islands.

Thirteen additional specimens, from 20 to 45 mm. long, were obtained from a reef in the harbor of Manokwari, in the northwest part of Dutch New Guinea.

In life this is a very handsome little fish, its deep blue coloration with vivid black lines making it very conspicuous.

***Salarias walensis* sp. nov.**

*Type* from Wala Island, New Hebrides. No. 17393 Field Museum of Natural History. Length 50 mm. March 29, 1929.

Dorsal XII-17; anal II-20.

The body is slender, elongate, not elevated, the dorsal and ventral profiles alike, the depth 4.85 to 4.95 times in the length. The head is 4.4 times in the length, nearly as deep as long, its anterior profile nearly vertical. The caudal equals the pectoral, 5.25 to 5.35 times in the length. The eye is 3.5 to 3.66 times, the snout (measured to the middle of the lip) 2.5 to 2.75, the least depth of the caudal peduncle 2.3 times in the head. The eyes are far forward, high up, and close together. The mouth is low down and wide, the maxillary extending beneath the posterior margin of the eye or beyond. There is a pair of short strong canines in the lower jaw. There is a simple tentacle on the upper part of the eye, equal to an eye diameter in length. There is no tentacle on the nostril or nape, and no occipital crest or fringe. The dorsal is not notched and does not extend to the caudal.

The color in alcohol is yellowish, sprinkled everywhere with minute brown specks; along the middle of the side is a row of 7 or 8 large circular blackish brown spots, with brown bands extending to the dorsal and anal; between some of these are smaller spots and narrower bands; along the back and extending upon the dorsal is a series of blackish brown spots; on the sides of the head and snout are scattered pearly or whitish circular spots with dark brown margins;

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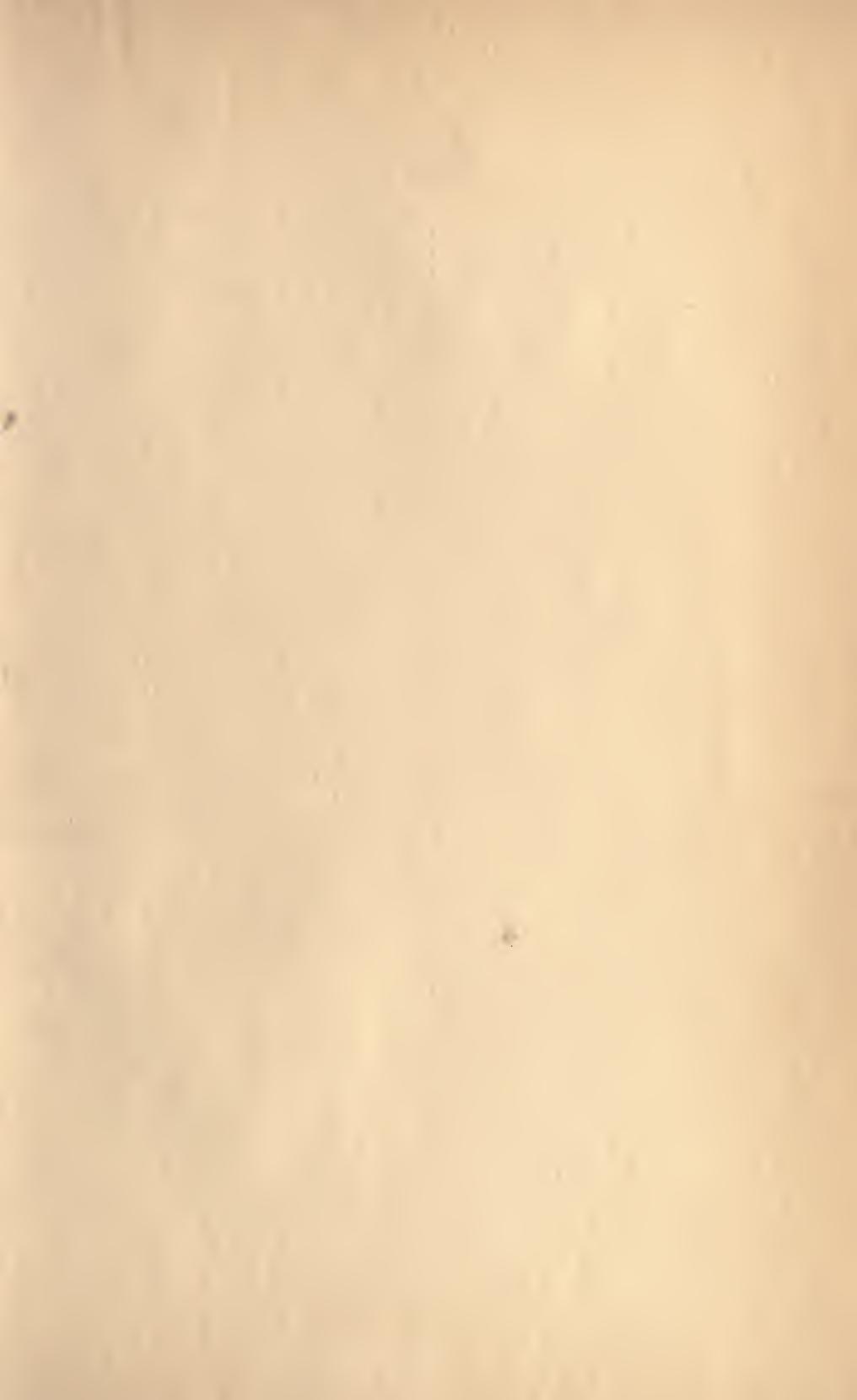
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the opercle is blackish brown and the under side of the head and throat are brown; there is a longitudinal blackish brown band on the first half of the dorsal; on the second half the membranes are each marked by a dark brown vertical line; the anal is pale except for a dusky margin on its anterior third; the base of the caudal is clear with a large median blackish spot; the lower part of the caudal is dusky; the pectoral is pale.

Here described from three specimens, 35 to 50 mm. in length, taken at Wala Island, New Hebrides.















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